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FORENSIC TESTING PROGRAM

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Serial Number Restoration
Test No. 21-5251 Summary Report

Each participant received a sample pack containing a piece of metal bar stock stamped with a six-character serial number that was then obliterated. An arrow was also stamped to indicate directionality. Also included was a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped alphanumeric characters. Participants were asked to restore the obliterated serial number and report their findings. Data were returned from 265 participants and are compiled into the following tables:

This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample set consisted of a piece of steel bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped digits. Participants were requested to attempt to restore the obliterated serial number utilizing their laboratory restoration methodologies and report the recovered serial number. The serial number to be restored consisted of 6 characters (17DH3K).

SAMPLE PREPARATION: Each sample set contained a piece of steel bar stock that was stamped with six characters (17DH3K), along with an arrow for directionality. The serial number was first obliterated by a milling machine, then a second process of light sanding/filing with a Dremel was performed to ensure full obliteration.

A piece of aluminum bar stock was also included in the sample as a reference standard. The alphanumeric characters provided are digits 0-9 and letters A-F, H, J, K and N.

SAMPLE SET ASSEMBLY: Each Item 1 steel bar stock and aluminum standard bar stock were separately enclosed in chip board, with the sides taped for security and then placed in their respective pre-labeled envelopes. Every sample pack was packaged to contain an Item 1 and aluminum standard. This process was repeated until all of the sample packs were prepared. Once verification was completed, all sample packs were sealed with a piece of evidence tape and initialed "CTS."

VERIFICATION: All three of the predistribution laboratories restored the obliterated six-character serial number and reported “17DH3K.” Multiple restoration methods were used including Fry's Reagent and magnetic restoration.

Summary Comments

This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were provided with a piece of metal bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped characters. Participants were requested to restore the obliterated serial number utilizing their laboratory recovery methodologies and report the recovered serial number. The serial number to be restored consisted of six characters - 17DH3K (Refer to Manufacturer's Information for preparation details).

Of the 265 responding participants in Table 1, 253 (95.5%) were able to restore all six expected characters on the Item 1 bar stock, with two characters (2 and 6) being restored by all participants. Twelve participants gave responses that were outliers to the expected results and consensus of the testing group for one or more characters, and they have been indicated by boxing. Seven of these outlier participants reported a character different from that which was expected, and the remaining five participants did not provide an alphanumeric response for one or more characters (reported *, ?, blank). CTS reviewed the reported data for each character individually and noted that although all six characters had a high recovery percentage (> 98%), some participants had difficulty with characters 1, 3, 4, and 5.

In Table 3 (Sample Preparation), the majority of participants used sanding, polishing, or visual methods to prepare their sample. In Table 4 (Recovery Methods), the majority of participants used a combination of both chemical and magnetic restoration methods. No trends were seen between the methods used and the challenges experienced by participants.

Recovered Characters

Please record the recovered characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
23KNDB	1	7	D	H	3	K
24F983	1	7	D	H	3	K
29TJ6J	1	7	D	H	3	K
2AYLV3	1	7	D	H	3	K
2BWPTK	1	7	D	H	3	K
2CUX4P	1	7	D	H	3	K
2EYM9J	1	7	D	H	3	K
2LX8AE	1	7	D	H	3	K
2MRKLQ	1	7	D	H	3	K
2QNQ4W	1	7	D	H	3	K
2TFFYB	1	7	D	H	3	K
2UPUW4	1	7	D	H	3	K
2VKDY7	1	7	D	H	3	K
2WY66L	1	7	D	H	3	K
2WYRC8	1	7	D	H	3	K
39T7EP	1	7	D	H	3	K
3D2RZ2	1	7	D	H	3	K
3DM32U	1	7	D	H	3	K
3HUJ49	1	7	D	H	3	K
3J7HFZ	1	7	D	H	3	K
3LDQWW	1	7	D	H	3	K
3N6DHE	1	7	D	H	3	K
3U7BL7	1	7	D	H	3	K
3ULKMJ	1	7	D	H	3	K
3VKME9	1	7	D	H	3	K
3WEGAR	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
3ZCUWG	1	7	D	H	3	K
3ZUXHW	1	7	D	H	3	K
4BD4BY	1	7	D	H	3	K
4ETHWK	1	7	D	H	3	K
4FKUD6	1	7	D	H	3	K
4PCA39	1	7	D	H	3	K
648QR8	1	7	D	H	3	K
6AQKMX	1	7	D	U	3	K
6BQ2XV	1	7	D	H	3	K
6DPWJX	1	7	D	H	3	K
6GYHCB	1	7	D	H	3	K
6HQLYQ	1	7	D	H	3	K
6KCVZY	1	7	D	H	3	K
6KDRBU	1	7	D	H	3	K
6VN9RY	1	7	D	H	3	K
6YGGH9	1	7	D	H	3	K
6Z9K6N	1	7	D	H	3	K
778VP8	1	7	D	H	3	K
78NFRB	1	7	D	H	3	K
79FJDP	1	7	D	H	3	K
7B3PKM	1	7	D	H	3	K
7KPNFY	1	7	D	H	3	K
7TMEYN	1	7	D	H	3	K
83LFQY	1	7	D	H	3	K
84X9P8	1	7	D	H	3	K
899BMW	1	7	D	H	3	K
8C9Z4P	1	7	D	H	3	K
8LYQLB	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
96HN7T	1	7	D	H	3	K
99ADZ8	1	7	D	H	3	K
9QRC9Q	1	7	D	H	3	K
9UAAHF	1	7	D	H	3	K
9YZBDL	1	7	D	H	3	K
A64ZJD	1	7	D	H	3	K
A8868E	1	7	D	H	3	K
A8T6KX	1	7	D	H	3	K
ANBRLU	1	7	D	H	3	K
ANUNZF	1	7	D	H	3	K
ANUT9W	1	7	D	H	3	K
ANWFQA	1	7	D	H	3	K
AP7VBF	1	7	D	H	3	K
AVYT4D	1	7	D	H	3	K
AYEVY4	1	7	D	H	3	K
BFY6YC	1	7	D	H	3	K
BGVTPF	1	7	D	H	3	K
BJHVPF	1	7	D	H	3	K
BRC7XQ	1	7	D	H	3	K
BYX2WA	1	7	D	H	3	K
C2F723	1	7	D	H	3	K
CANAWM	1	7	D	H	8	K
CEKXDU	1	7	D	H	3	K
CFVR6N	1	7	D	H	3	K
CLKTFF	1	7	D	H	3	K
CQD9XV	1	7	D	H	3	K
CR9ZU2	1	7	D	H	3	K
CZLRJY	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
CZMNRA	1	7	D	H	3	K
CZPGNW	1	7	D	H	3	K
D9VB6M	1	7	D	H	3	K
DCRGMT	1	7	D	H	3	K
DGHQWR	1	7		H	3	K
DHXX9Z	1	7	D	H	3	K
DK3TPH	1	7	D	H	*	K
DK6QA8	1	7	D	H	3	K
DK7LWJ	1	7	D	H	3	K
DMTDQ2	1	7	D	H	3	K
DNJKP6	1	7	D	H	3	K
DNKFCG	1	7	D	H	3	K
DTK2DE	1	7	D	H	3	K
DUBQME	1	7	D	H	3	K
DV79NG	1	7	D	H	3	K
DYN2QP	?	7	?	H	3	K
DYPX2L	1	7	D	H	3	K
E6QE2T	1	7	D	H	3	K
EBV97M	1	7	D	H	3	K
EPFTLA	1	7	D	H	3	K
EQB8BM	1	7	D	H	3	K
F7GKUA	1	7	D	H	3	K
F7JK7Q	1	7	D	H	3	K
FHPVDD	1	7	D	H	3	K
FJ6XJL	1	7	D	H	3	K
FMKZB4	1	7	D	H	3	K
FT9XNX	1	7	D	H	3	K
FTB27A	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
FVRDXK	1	7	D	H	3	K
G3APNC	1	7	D	H	3	K
G7B62N	1	7	D	H	3	K
GAFEAQ	1	7	D	H	3	K
GATQ7A	1	7	D	H	3	K
GBAEHH	1	7	D	H	3	K
GBN668	1	7	D	H	3	K
GCJJUK	1	7	D	M	3	K
GJ3M2M	1	7	D	H	3	K
GM2ZND	1	7	D	H	3	K
GM4QTA	1	7	D	H	3	K
GMJFAM	1	7	D	H	3	K
GRVZ2M	1	7	D	H	3	K
GZMFPR	1	7	D	H	3	K
H6CG6B	1	7	D	H	3	K
HFGCGN	1	7	D	H	3	K
HH67DA	1	7	?	H	3	K
HJU84D	1	7	D	H	3	K
HL4H9A	1	7	D	H	3	K
HQE7XR	1	7	D	H	3	K
HQTR69	1	7	D	H	3	K
J9BBXQ	1	7	D	H	3	K
JD7CN8	1	7	D	H	3	K
JEZZ83	1	7	D	H	3	K
JHHPK8	1	7	D	H	3	K
JV7UUP	1	7	D	H	3	K
JY7Z9V	1	7	D	H	3	K
K66G7Y	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
K8EYFC	1	7	D	H	3	K
KBE3AJ	1	7	D	H	3	K
KD6UCU	1	7	D	H	3	K
KEWXYA	1	7	D	H	3	K
KF93NE	1	7	D	H	3	K
KPD28N	1	7	D	H	3	K
KTGD3A	1	7	D	H	3	K
KY263U	1	7	D	H	3	K
L26JGT	1	7	D	H	3	K
L3DBCA	1	7	D	H	3	K
L8CJMB	1	7	D	H	3	K
LHAZGY	1	7	D	H	3	K
LJ7ZCC	1	7	D	H	3	K
M44EFL	1	7	D	H	3	K
MH3KTK	1	7	D	H	3	K
MH8KUQ	1	7	D	H	3	K
MNVA99	1	7	D	H	3	K
MZ6F8W	1	7	D	H	3	K
MZ9CPZ	1	7	D	H	3	K
MZNMNT	1	7	D	H	3	K
N2QPAA	1	7	D	H	3	K
N3PLA6	1	7	D	H	3	K
N6HF6N	1	7	D	H	3	K
NJ9TUF	1	7	D	H	3	K
NL44EJ	1	7	D	H	3	K
NL7GTJ	1	7	D	H	3	K
P39FFD	1	7	D	H	3	K
PCAJ3H	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
PDPZXP	1	7	D	H	3	K
PEG3K6	1	7	D	H	3	K
PG3JM6	1	7	D	H	3	K
PK4XH3	1	7	D	H	3	K
PKQTYQ	1	7	D	H	3	K
PPKB9G	1	7	D	H	3	K
PRPHFV	1	7	D	H	3	K
PVNUCV	1	7	D	H	8	K
PVQTJ3	1	7	D	H OR N	3	K
PWHF6L	1	7	D	H	3	K
PWJCDW	1	7	D	H	3	K
QJRHN2	1	7	D	H	3	K
QKKW78	1	7	D	H	3	K
QMRQUW	1	7	D	H	3	K
QTXDUD	1	7	D	H	3	K
QWXJAJ	1	7	D	H	3	K
R4BHY9	1	7	D	H	3	K
R6N4U6	1	7	D	H	3	K
R7CAZZ	1	7	D	H	3	K
R7WBYH	1	7	D	H	3	K
R8QYGD	1	7	D	H	3	K
REDUFW	1	7	D	H	3	K
RF986B	1	7	D	H	3	K
RHQRNJ	1	7	D	H	3	K
RJ7Q6N	1	7	D	H	3	K
RKHQ43	1	7	D	H	3	K
RNDEKA	1	7	D	M	3	K
RNYQ4W	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
RUHDVZ	1	7	D	H	3	K
RWBKJX	1	7	D	H	3	K
RZPCDX	1	7	D	H	3	K
RZU77Y	1	7	D	H	3	K
T48WW8	1	7	D	H	3	K
T4AGRM	1	7	D	H	3	K
TCF2XH	1	7	D	H	3	K
TDCEKB	1	7	D	H	3	K
TERYME	1	7	D	H	3	K
TRGXDG	1	7	D	H	3	K
U3ADLC	1	7	D	H	3	K
U437GV	1	7	D	H	3	K
UAT63H	1	7	D	H	3	K
UBMTKD	1	7	D	H	3	K
UCY47J	1	7	D	H	3	K
UDA7RH	1	7	D	H	3	K
ULMLRJ	1	7	D	H	3	K
UMENEY	l	7	D	H	3	K
UR2EMP	1	7	D	H	3	K
UYB3PC	1	7	D	H	3	K
V2QLW6	1	7	D	H	3	K
V6A7RF	1	7	D	H	3	K
V6VE46	1	7	D	H	3	K
VAHGW4	1	7	D	H	3	K
VDPRYY	1	7	D	H	3	K
VFDYN2	1	7	D	H	3	K
VGF93C	1	7	D	H	3	K
VJQ28C	1	7	D	H	3	K

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
VJRYGM	1	7	D	H	3	K
VLED6W	1	7	D	H	3	K
W273MR	1	7	D	H	3	K
W2R7CZ	1	7	D	H	3	K
W72RAQ	1	7	D	H	3	K
W778PC	1	7	D	H	3	K
WAGWVL	1	7	D	H	3	K
WBFYMB	1	7	D	H	3	K
WC39FP	1	7	D	H	3	K
WJ6MGE	1	7	D	H	3	K
WLVPM2	1	7	D	H	3	K
WM6YDD	1	7	D	H	3	K
WNKTZL	1	7	D	H	3	K
WUL8LM	1	7	D	H	3	K
WVZW32	1	7	D	H	3	K
X9R986	1	7	D	H	3	K
XB9VG4	1	7	D	H	3	K
XGXR9V	1	7	D	H	3	K
XKYV33	1	7	D	H	3	K
XLA64T	1	7	D	H	3	K
XLAPTB	1	7	D	H	3	K
XPV64A	1	7	D	H	3	K
XX8FLV	1	7	D	H	3	K
YB6KDK	1	7	D	H	3	K
YCGEWR	*	7	D	H	3	K
YCZRAP	1	7	D	H	3	K
YF4TL2	1	7	D	H	3	K
YFWCDA	1	7	D	H	3	K

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
YKTZW2	1	7	D	H	3	K
YM2GLE	1	7	D	H	3	K
YRA4RN	1	7	D	H	3	K
YVXE9G	1	7	D	H	3	K
YY7FT7	1	7	D	H	3	K
YYDHP7	1	7	D	H	3	K
YZXZGK	1	7	D	H	3	K
Z6HJLT	1	7	D	H	3	K
ZEKYAD	1	7	D	H	3	K
ZMXFRR	1	7	D	H	3	K
ZNUP73	1	7	D	H	3	K
ZP3G46	1	7	D	H	3	K
ZW284L	1	7	D	H	3	K
ZWHR2J	1	7	D	H	3	K
ZXYFEQ	1	7	D	H	3	K

Response Summary						Participants: 265
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
Consensus	1	7	D	H	3	K
Number	262	265	262	261	262	265
Percent	98.9%	100.0%	98.9%	98.5%	98.9%	100.0%

Conclusions

TABLE 2

WebCode	Conclusions
23KNDB	After application of the magnetic particle inspection and acid etch methods the serial number of Item 1 was recovered and interpreted as "17DH3K".
24F983	Item 1 was visually examined and photographed. The item was a piece of steel bar with an obliterated area in the center. The obliterated area appeared to be circular and scratch in the center. The obliterated area was polished with sandpaper. The area was then treated with Fry's chemical reagent. The serial number was revealed to be 17DH3K. Photographs of the steps were conducted through the process.
29TJ6J	The serial number was fully restored using chemical restoration techniques. The serial number was determined to be 17DH3K.
2AYLV3	[No Conclusions Reported.]
2BWPTK	For our examination two types of methods were used [destructive and non destructive].The non destructive method was performed using Magnaflux (MV-740 & 7HF) after polishing the surface using drimel tool, while destructive method was performed using reagent [Ferric Chloride 25g conc,, HCL 25 ml, Distill water 100ml]. In conclusion the restoration presented good contrast and was reproducible.
2CUX4P	Using the acid etch technique, the obliterated serial number on Item 1 was restored to read: 17DH3K.
2EYM9J	Results: Serial Number Restoration: Lab Item(s)#: Restoration Results 1: 17DH3.
2LX8AE	The serial number of Item 1 as restored is 17DH3K.
2MRKLQ	17DH3K.
2QNQ4W	Examination of the questioned Item 1 showed the following: i). Presence of an obliterated area on the center of the steel bar stock. ii). The area was sanded, polished and chemically treated to restore the serial number, resulted in a full recovery of the Item 1 serial number. The recovered number reads as follows: 17DH3K. The restored alphanumeric characters were original since they present the same size, shape and positioning of the standard sample sent. Based on the above findings, in my professional opinion, the original serial number on Item 1 was 17DH3K.
2TFFYB	Item 1 restoration results: "17DH3K".
2UPUW4	Serial number development is performed by the electromagnetic method, throwing as a result the number 17DH3K.
2VKDY7	The serial number on piece of cold rolled steel bar stock (item 1) was restored and found to be "1 7 D H 3 K".
2WY66L	The serial number on the metal bar (Item 1) reads: 17DH3K.
2WYRC8	SERIAL NUMBER WAS SUCCESSFULLY RESTORED AND DETERMINED TO BE: 17DH3K.
39T7EP	The obliterated six alphanumeric characters on the steel bar stock (Item 1) were restored as followed: 1 7 D H 3 K.
3D2RZ2	Item #1 was received with a suspected obliterated serial number. Attempts to restore the serial number with polishing and chemical processing were done. The best observation of the obliterates serial number is "17DH3K".
3DM32U	Restoration of the obliterated area revealed the characters 17DH3K.
3HUJ49	Further examination of the submitted cold rolled steel bar stock found that the serial number was obliterated. Physical, magnetic and chemical processing restored the serial number to read 17DH3K.
3J7HFZ	On examination, I found no number on the cold rolled steel bar stock. However, I observed the surface of the cold rolled steel bar stock was filed. After electrochemical treatment, the obliterated serial number was restored and read as "17DH3K".

TABLE 2

WebCode	Conclusions
3LDQWW	Item #1 bar stock was submitted with an obliterated area on its surface. Upon restoration, serial numbers "1 7 D H 3 K" were restored.
3N6DHE	The restored serial number was: 17DH3K.
3U7BL7	[No Conclusions Reported.]
3ULKMJ	Examination of the steel bar in Item #1 displayed an obliterated area. Standard restoration techniques were applied and revealed the following characters "17DH3K".
3VKME9	The procedure was carry out on the metal piece identified as "Item 1" and it was able to restore the alphanumeric sequence 17DH3K.
3WEGAR	The serial number of the Item 1 piece of metal was restored and found to be: 17DH3K.
3ZCUWG	Standard restoration techniques revealed the following characters: 17DH3K.
3ZUXHW	The above number was abliterated throught mechanically abliterated of metal surface from serial number field.
4BD4BY	The serial number was restored to read 17DH3K.
4ETHWK	1). Examination of Exhibit 1 revealed one cut metal bar stock with an area of obliteration. The obliterated area on Exhibit 1 was fully restored and the following characters were observed: 1 7 D H 3 K. TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
4FKUD6	The serial number had been erased. It was restored to read 17DH3K.
4PCA39	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. Physical processing of the submitted bar stock restored the obliterated, original serial number to read "17DH3K".
648QR8	Submission 001 was examined and found to have an obliterated serial number. Submission 001 was photographed prior to polishing with a Dremel tool. Magnetic processing was effective in restoring the serial number to read 17DH3K.
6AQKMX	Upon electrochemical treatment on filed surface, I am restored number 17DU3K. Hence, i am of the opinion that the original number is '17DU3K'.
6BQ2XV	Examination and restoration of the serial number on Item 1 (a metal bar stock) revealed the following characters: "17DH3K".
6DPWJX	The erased number consisted of 6 characters, all of which I was able to restore. The obliterated serial number on the gun was restored to read 17DH3K.
6GYHCB	The following characters were recovered on Item 1: 1 7 D H 3 K.
6HQLYQ	Item #1 Restoration results: 17DH3K.
6KCVZY	Examination of the surface of the cold rolled steel bar revealed evidence pf an obliterated serial number. The surface was treated and the following original serial number was restored: 1 7 D H 3 K.
6KDRBU	Recovered Characters: 17DH3K.
6VN9RY	Area containing obliterated serial number was fully restored to read: 17DH3K.
6YGGH9	The serial number on Item 1 was restored to read 17DH3K using chemical etching techniques.

TABLE 2

WebCode	Conclusions
6Z9K6N	As a result of an attempted obliterated number restoration the following characters were observed: 17DH3K. This report may contain the conclusions, opinions, and interpretations of the examiner whose signature appears on the report.
778VP8	Restoration Results: 17DH3K.
78NFRB	After a visual inspection, the area where the serial number had been removed was determined to be magnetic. The area was subjected to sanding with a sanding drum on an electric Dremmel tool and hand sanding/polishing with varying grades of wet/dry sandpaper. The area was then treated with: Magnavis, Turner's Solution, Davis' Solution, Magnavis, Fry's Solution. Photographs were taken during the processing. Positive. The recovered serial number was: 17DH3K.
79FJDP	Standard restoration techniques revealed the following characters "17DH3K."
7B3PKM	A serial number restoration was attempted on Item 1 using polishing and chemical etching techniques. The serial number was restored to read 17DH3K.
7KPNFY	The obliterated area on the piece of cold rolled steel bar stock in item 1 was chemically etched and the serial number was determined to be 17DH3K.
7TMEYN	Using polishing and chemical etching, the serial number was restored to read: 17DH3K.
83LFQY	The number serial 17DH3K was recovered uaing the techinical not destructive and not invasive "MAGNETICAL O MAGNAFLUX".
84X9P8	Items: Description/Visual Examination: Item 1: One (1) cold rolled steel bar stock with suspected serial number obliterated. Examination Results: Using chemical & physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: 1 7 D H 3 K was restored on Item 1.
899BMW	Examination of exhibit SNR2 disclosed it to be a piece of ferrous metal like material with unknown tool marks consistent with that of grinding and milling marks. Using standard laboratory restorative techniques, the obliterated areas were processed and the following serial number was recovered: 17DH3K.
8C9Z4P	Standardd restoration techniques revealed the following characteristics on Item #1, "17DH3K".
8LYQLB	Chemical restoration revealed the serial number to be 17DH3K.
96HN7T	Item Detail: Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Materials Used: Steel wool, Magnetic Particle Inspection (MPI), Davis, Turner, and Fry. Area/Items Processed: Item #1 was received for serial number processing on 11/08/2021. The serial number was obliterated by scratching/a pointed hand tool. The area of interest was polished with steel wool prior to MPI and chemical processing. After it was determined that it was a ferrous (magnetic) surface, MPI and the appropriate chemical etchants to include Davis, Turner, and Fry, were utilized in an attempt to visualize the obliterated characters. Through examination and processing, the obliterated serial number was fully restored to read '17DH3K'.
99ADZ8	The obliterated serial number on Item #1 was restored to read 17DH3K by polishing and using chemical etchants.
9QRC9Q	Examination of Item #1 revealed an obliterated area on the center of the steel bar stock. Standard restoration techniques revealed the following characters #17DH3K".
9UAAHF	The serial number of the Item 01-01 bar stock was restored to read, "17DH3K." The Item 01-02 aluminum sheet was used as a reference.
9YZBDL	The serial number on item 1 was fully restored to be 17DH3K.
A64ZJD	The obliterated area on Exhibit 1 (steel bar) was restored and the following characters were observed: 1 7 D H 3 K.

TABLE 2

WebCode	Conclusions
A8868E	The serial number on the metal plate (Exhibit 01) was mechanically and chemically treated and restored to read 17DH3K. The metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.
A8T6KX	Standard serial number restoration techniques revealed the following characters: 17DH3K.
ANBRLU	Serial number restoration was completed via the use of chemical etching. Metal was a magnetic material. Serial number chemicals used consisted of Davis, Turner, Fry's Reagent and Nitric Acid. Please refer to S/N Restoration worksheet and photographs for further information. The following steps were taken to obtain the serial number: Visual, Photograph, Davis- photograph document findings, Fry-photograph document findings, Nitric Acid- photograph document findings, Fry-photograph, document findings and had full restoration of 17DH3K.
ANUNZF	Chemical restoration techniques were applied to item #1 and the original serial number was restored as 17DH3K.
ANUT9W	Using magnetic and chemical methods, the obliterated serial number located on the recessed portion of Item 001, was restored to read 17DH3K. Item 002 was inventoried and photographed.
ANWFQA	The serial number was fully restored to read 1 7 D H 3 K using sand paper, Fry's reagent and photography.
AP7VBF	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and chemically processed. As a result of these actions, the serial number was restored to read 17DH3K.
AVYT4D	1). Examination of Exhibit 1 revealed it to be one bar of ferromagnetic metal with an obliterated area located off center from the middle of the bar. a. Exhibit 1 measured approximately 71mm long, 25mm wide, and 6.5mm thick. b. The obliterated area of Exhibit 1 was restored and the following characters were observed:1 7 D H 3 K.
AYEVY4	In table format: Serial Number Restoration Lab Item(s)#: Restoration Results 1-1: 17DH3K
BFY6YC	ONE (1) PIECE OF STEEL BAR STOCK (1" X 2 3/4") SUBMITTED WITH A SUSPECTED OBLITERATED SERIAL NUMBERS. APPROXIMATELY 1" X 1" AREA OF SURFACE DEFACED THROUGH ABRASIONS/ GRINDING. SERIAL# 17DH3K RESTORED USING CHEMICAL ETCHING. EVIDENCE SCRIBED "OFS#21-0015918" BY EXAMINER FOR IDENTIFICATION PURPOSES. NOTE: ABOVE EVIDENCE WAS SUBMITTED IN A TAN ENVELOPE LABELLED "2021 CTS FORENSIC TESTING PROGRAM, TEST NO. 21-5251E: SERIAL# RESTORATION SAMPLE PACK: SNR2".
BGVTPF	Using standard laboratory physical, chemical, and magnetic restoration techniques, the obliterated serial number on Item 1 was restored to read 1 7 D H 3 K.
BJHVPF	Serial number restoration was performed on item 1.1. The serial number 17DH3K was restored on item 1.1.
BRC7XQ	Lab Item(s)#: 1 Restoration Results: 17DH3K.
BYX2WA	Examination of the steel bar in Item #1 revealed an obliterated area. Standard restoration techniques revealed the following characters: "17DH3K".
C2F723	Item 1 was received with a possible obliterated serial number. The serial number has been restored using physical, magnetic and chemical processes. The serial number is 17DH3K.
CANAWM	Item #1 contained an area with obliterated characters which were restored as "17DH8K".
CEKXDU	The alphanumeric sequence of the analyzed piece of metal was erased by wear and by means of chemical restoration it was possible to obtain a sequence consistent with the comparative material provided.
CFVR6N	The obliterated number on Item SNR2 was polished and chemically restored to reveal the serial number: 17DH3K.

TABLE 2

WebCode	Conclusions
CLKTFF	The serial number of Item 001 was chemically and mechanically processed and restored to read "17DH3K". This is also the opinion of Firearms Examiner.
CQD9XV	The number on piece of steel bar stock was found to be tampered and restored number is "17DH3K".
CR9ZU2	Standard Serial number restoration techniques were used on Item #1-1 which revealed the characters "17DH3K".
CZLRJY	The restoration procedure was applied to the steel bar and the alphanumeric sequence 17DH3K was obtained.
CZMNRA	Item #1: One piece of steel bar stock with an obliterated serial number Findings: Standard serial number restortion techniques revealed the following characters "17DH3K".
CZPGNW	The obliterated area on the submitted piece of steel bar stock was restored using mechanical polishing, magnetic particle inspection, and chemical etching to reveal the following serial number: 1 7 D H 3 K. The restoration was documented with notes and photographs.
D9VB6M	As a result of an attempted obliterated number restoration the following characters were observed: 17DH3K.
DCRGMT	The original serial number was removed by mechanical procedures (milling and later scratched). After carrying out restoration work it was determined that the original serial number was 17DH3K.
DGHQWR	The serial number was determined to be 1 7 _ H 3 K. The third character is D or B.
DHXX9Z	Standard serial number restoration techniques revealed the following characters "17DH3K".
DK3TPH	Examination Procedure: Serial number restoration was performed by using a combination of analytical techniques. These include: visual examination with white light illumination, polishing, chemical etching, and photography. Examination Results: Item 1: One piece of metal bar stock. The obliterated serial number was partially restored to read 17DH*K. The * could represent either a 3 or an 8.
DK6QA8	Chemical restoration of the milled area revealed the serial number to be 17DH3K. Submission #1 will be retained on file at the laboratory.
DK7LWJ	Serial number restoration for Item #1 was performed and the following characters were restored "17DH3K".
DMTDQ2	The submitted piece of bar stock, item 1, was observed to have an obliterated serial number. Serial number restoration techniques were performed on item 1 and the following characters were revealed: “1 7 D H 3 K”.
DNJKP6	The Item #1 was physically and chemically processed. Its serial number was restored to read: 17DH3K.
DNKFCG	The defaced serial number on the silver-colored bar was restored and appears to read 17DH3K.
DTK2DE	The serial number for Item 1 was restored to read: 17DH3K.
DUBQME	Serial Number Restoration: Lab Item #1. Restoration Results: 17DH3K.
DV79NG	The obliterated serial number was magnetically and chemically processed and restored to read “17DH3K”.
DYN2QP	We were able to identify a part of the number "? 7 ? H 3 K". The first digit we could'nt see anything. We think the third digit could be 0, 9 or D.
DYPX2L	Restoration Results: 17DH3K.
E6QE2T	Once the serial number restoration procedure was carried out using the magnetic method, the highlighting of alphanumeric digits corresponding to 17DH3K was obtained.
EBV97M	Examination of the bar stock in Item #1 revealed an obliterated area. Restoration Results: 17DH3K.
EPFTLA	The serial number on the piece of metal (Exhibit 1) was mechanically restored to read 17DH3K.

TABLE 2

WebCode	Conclusions
EQB8BM	The obliterated serial number of Item 1 was restored using mechanical polishing and chemical etching techniques and was found to be: 17DH3K.
F7GKUA	Submission 001: Serial number restored to read: 17DH3K.
F7JK7Q	Attempts to physically and chemically restore the obliterated serial number of Laboratory Item 1 were successful. The restored serial number is 17DH3K.
FHPVDD	Serial number restoration was performed on item 1. The serial number 17DH3K was restored.
FJ6XJL	Examination of the piece of metal in Item #1 revealed an obliterated area on the surface. Standard restoration techniques revealed the characters "17DH3K".
FMKZB4	The serial number on Item 1 was restored using mechanical polishing and chemical etching techniques to read: 17DH3K.
FT9XNX	The serial number of Item #1 was processed using mechanical polishing and chemical etching. The serial number was restored and determined to be "1 7 D H 3 K".
FTB27A	ONE PIECE OF FERROUS STEEL MEASURING 2 1/2" X 1". SERIAL NUMBER 17DH3K RESTORED THROUGH CHEMICAL AND MAGNETIC PARTICLE INS[ECTION. TEST NUMBER SCRIBED ON STEEL.
FVRDXK	[No Conclusions Reported.]
G3APNC	The obliterated serial number on Exhibit 1 was visually examined, magnetically and chemically processed, and restored to read 17DH3K.
G7B62N	Once the surface of the stainless steel plate was prepared, the surface, which had an area with material wear, was polished with 1200 sandpaper, the non-destructive technique of the magnetic method was applied and the following alphanumeric characters 17DH3K were revealed.
GAFEAQ	The serial number of item 1 was examined using magnetic particle inspection and chemically processed with the resulting serial number determined to be 17DH3K.
GATQ7A	1). Exhibit 1 is a piece of steel bar stock with the center obliterated. a). Restoration techniques were used on the obliterated area of the Exhibit 1 bar stock. The following characters were observed: 1 7 D H 3 K. TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
GBAEHH	The Item 1 barstock was subjected to magnetic particle inspection in an attempt to restore the serial number. The serial number 17DH3K was observed.
GBN668	The serial number on the piece of metal (Exhibit 1) was mechanically treated and restored to read 17DH3K.
GCJJUK	THE ERASED SERIAL NUMBER WAS RESTORED USING BOTH PHYSICAL AND CHEMICAL TECHNIQUES. THE NUMBER WAS 17DM3K.
GJ3M2M	The serial number was restored to 17DH3K.
GM2ZND	THE FOLLOWING EVIDENCE WAS RECEIVED. THE EVIDENCE WAS ANALYZED ON THE BELOW-LISTED DATE. CONTAINER #GM2ZND: ITEM 1: ONE PIECE OF COLD ROLLED STEEL BAR STOCK THE ANALYSIS OF THE ABOVE-LISTED EVIDENCE WAS INITIATED ON NOVEMBER 10, 2021. ITEM 1 WAS VISUALLY EXAMINED. ADDITIONALLY, USING POLISHING, MAGNETIC, AND CHEMICAL RESTORATION METHODS, THE SERIAL NUMBER ON ITEM 1 WAS RESTORED TO READ THE FOLLOWING: 1 7 D H 3 K. THE LISTED EVIDENCE WAS ANALYZED ON 11/10/2021 AND WILL BE RETAINED IN THE FIREARMS ANALYSIS UNIT'S FIREARMS EVIDENCE VAULT.
GM4QTA	The serial number 17DH3K was restored on the item 1 piece of metal.

TABLE 2

WebCode	Conclusions
GMJFAM	I undertook a magnetic particle inspection serial number restoration process and the serial number characters were identified to be *7**** (where * is a unknown character). I further undertook a chemical etching serial number restoration process and the serial number characters were identified to be 17DH3K.
GRVZ2M	Upon completion of polishing and chemical etching of the obliterated portion of the cold rolled steel bar stock, Item 1, I determined that the serial number consists of the following six (6) alphanumeric characters, 17DH3K.
GZMFPR	Submission 1 contained bar stock with an obliterated serial number, item 1-1, and an aluminum standard, item 1-2. Item 1-1: Bar stock with obliterated serial number: The primary serial number, located in the middle of the bar stock, appeared to have been deliberately obliterated through grinding. I used polishing and magnetic particle inspection techniques to fully restore the following serial number: 1 7 D H 3 K. According to the submitted paperwork, the serial number for this item should have six characters. The examination was documented with a series of 16 digital images.
H6CG6B	The obliterated serial number on the steel bar stock in Item #1 was completely restored and found to be 1 7 D H 3 K.
HFGCGN	In the development of the serial number the following numerical alpha number 17DH3K was obtained.
HH67DA	Examination of Item 1 revealed an obliterated area. Standard chemical restoration techniques were applied to Item 1 and revealed the following characters: "17?H3K". The questioned character appears to be a "D".
HJU84D	The Item 1 serial number was restored. The serial number is "17DH3K".
HL4H9A	Item 1 was examined and found to have an obliterated serial number. Standard restoration techniques were applied to Item 1. The following characters were restored: 17DH3K. Multiple factors could have had an effect on the interpretation of the restored characters.
HQE7XR	The serial number of the metal piece (steel bar), described in item 001, was restored and corresponds to: 17DH3K. [Examiner] Oct/13/2021.
HQTR69	One piece of black, coated metal bar stock of approximately 2 11/16"L x 1/4"W x 1"H with suspected obliterated serial number on center portion. The obliterated serial number was chemically processed and restored to read "17DH3K". OFS# scribed onto back of bar stock by examiner for identification purposes.
J9BBXQ	The serial number had been erased by milling, but was forensically restored and read 17DH3K.
JD7CN8	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a results of these actions, the serial number was restored to read “17DH3K”.
JEZZ83	Examination and chemical processing of the Item 1 bar stock restored the original obliterated serial number which was determined to be ‘17DH3K’.
JHHPK8	Gray metal bar stock submitted in a small tan envelope labeled "Test No. 21-5251 (Item 1). Serial Number defaced by circular abrasion. Serial number restored using chemical etching techniques and magnetic particle inspection and resulted in a full restoration "17DH3K". CTS#21-5251 was etched on backside, by examiner, for identification purposes.
JV7UUP	Serial number was restored to read "17DH3K".
JY7Z9V	Items: Description/Visual Examination: Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Examination Results: Item 1 cold rolled steel bar stock: Using chemical and physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: 1 7 D H 3 K was restored on Item 1.
K66G7Y	The obliterated serial number on Item 001-02 was restored to read 17DH3K.

TABLE 2

WebCode	Conclusions
K8EYFC	The obliterated area of Item 1 was mechanically and chemically processed for serial number restoration. The restored serial number is as follows: 17DH3K.
KBE3AJ	I visually inspected item 1 and found no readily visible alpha or numeric characters. Attempts to restore the serial number were made by sanding and polishing the surface with a dremel tool and acid etching resulting in the serial number being restored to read, "17DH3K". See photo attached of the restored number.
KD6UCU	Restoration techniques were used to restore the obliterated serial number on the metal block, Item 1, to "17DH3K".
KEWXYA	The following characters were restored after serial number restoration: 17DH3K.
KF93NE	Restoration Results: 17DH3K.
KPD28N	[No Conclusions Reported.]
KTGD3A	The obliterated area of the Exhibit 1 steel bar stock was polished and chemically processed. The recovered characters were concluded to be 17DH3K.
KY263U	Item A1-1: The obliterated serial number on the item A1-1 was restored and found to be 1-7-D-H-3-K.
L26JGT	An attempt to restore the obliterated serial number on a piece of steel bar stock, item 1, was performed by using polishing, magnetic particle visualization and chemical etching techniques, and the following serial number was restored "17DH3K'.
L3DBCA	The obliterated serial number has been restored and it reads as follows: 17DH3K.
L8CJMB	Item #1 was observed to have an obliterated area. Restoration of the obliterated area on Item #1 yielded the following characters: 17DH3K.
LHAZGY	The serial number was restored and was interpreted to read 17DH3K.
LJ7ZCC	Item number: 1 (metal bar) was visually and microscopically examined. It possessed an area with toolmarks that reportedly contained a serial number. The defaced area was sanded, polished and then magnetically tested in an attempt to restore the serial number. The following letters and digits were noted during the restoration process: 17DH3K. The restored serial number on item number 1 was noted as: 17DH3K.
M44EFL	Exhibit 1 was a small piece of steel with a visible area that had been milled out. Swirl toolmarks visible on the surface of the milled area. The milled area was polished using 0000 grade steel wool, autosol metal paste and very fine grit sandpaper. This produced a smooth mirror finish. FRY's reagent was then applied to the smooth surface using a cotton tip swab. Within seconds the obliterated serial number became visible. Six digits in total. Mixture of numbers and letters.
MH3KTK	The serial number "17DH3K" was stamped on the examined metal bar stock.
MH8KUQ	Examination and mechanical processing of exhibit 1.1 (steel bar stock) revealed that the original serial number is 17DH3K.
MNVA99	Item #1 was received and upon examination an obliterated area was observed. During restoration the following characters were observed: 17DH3K.
MZ6F8W	If I were allowed to word the report properly it would say, "Restoration techniques applied to Item 1 revealed the following serial number characters: 17DH3K ". However, under our current report writing format, the conclusions of my report would simply read 17DH3K under a column marked "Restoration Results".
MZ9CPZ	Item 1 is piece of steel bar stock with suspected obliterated serial number. Using standard restoration techniques, the obliterated serial number on Item 1 was restored to read: 17DH3K.
MZNMNT	Item 1 exhibited an area of obliteration. Chemical and mechanical restoration techniques were applied and the serial number 17DH3K was recovered. Item 1B was not examined.

TABLE 2

WebCode	Conclusions
N2QPAA	Based on my finding, I am of the opinion that the steel bar was tempered and was restored and read as 17DH3K.
N3PLA6	The serial number was restored to read 17DH3K using chemical etching techniques.
N6HF6N	After use of our standard procedures for obliterated serial number restoration we found the following number (left to right) 17DH3K.
NJ9TUF	The examination and processing of the obliterated serial number on the Item 1 piece of metal was restored to read "17DH3K".
NL44EJ	Rapid development was given in most of the characters that make up the sequence; using electromagnetic development. One character was not easy to determine and by applying chemical reagents it was determined.
NL7GTJ	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination, Sanding), Microscopy (Comparison Microscope, Chemical (Reagent Etching, Magnetic Particle Inspectio. Serial number restoration procedures revealed the serial number on Item 1, the steel bar stock, to be: 1 7 D H 3 K.
P39FFD	A serial number restoration was carried out on a piece of bar stock (Item 2105737/001) with an obliterated number. After the application of a chemical reagent (Method 01 Version 4 - chemical restoration), the following characters were developed - 17DH3K. The characters were confirmed using a known reference sample of alphanumeric characters used in the manufacturing process. The developed characters had similar font and size to the reference sample provided.
PCAJ3H	Once the serial number restoration procedure has been carried out, it can be concluded that it corresponds to the following characters "17DH3K".
PDPZXP	Examination of the submitted steel bar stock found the manufacturer's serial number to have been obliterated. Physical and magnetic processing of the cold rolled steel bar stock restored the obliterated, original serial number to read "17DH3K".
PEG3K6	As a result of an attempted obliterated number restoration the following characters were observed: 17DH3K
PG3JM6	The serial number was successfully recovered and is: 17DH3K.
PK4XH3	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a result of these actions, the serial number was restored to read “17DH3K”.
PKQTYQ	The serial number of Submission 1 as restored is 17DH3K.
PPKB9G	The serial number that was restored is interpreted to 17DH3K. The fourth character is a bit uncertain and the H could be an N, however did the H seemed more likely overall.
PRPHFV	Restoration Results: 17DH3K.
PVNUCV	Restoration Results: 17DH8K.
PVQTJ3	Using physical, magnetic, and chemical restoration techniques, the obliterated serial number on Exhibit 1a was partially restored to read 17D*3K. The fourth digit could be either an H or an N.
PWHF6L	The serial number of the piece metal identified item 1 is 17DH3K.
PWJCDW	[No Conclusions Reported.]
QJRHN2	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a result of these actions, the serial number was successfully restored to read “1 7 D H 3 K”.
QKKW78	Restoration Results: 17DH3K.
QMRQUW	The 1.1 bar stock was examined and an area of obliteration was observed. The characters "17DH3K" were restored on the 1.1 bar stock. This should be considered the complete serial number.

TABLE 2

WebCode	Conclusions
QTXDUD	Following repeated restorations methods and applications of Fry's Reagent a serial number was resolved indicating six characteristic being " 17DH3K" within an area approximately 22mm x 5mm.
QWXJAJ	The original stamping on the mild steel bar had been removed by a milling process. A six character stamping, containing a mix of letter and number stamps was restored to read: 17DH3K.
R4BHY9	Item 1 was processed for serial number restoration. Examination and restoration of the obliterated area on Item 1 revealed the following characters: 17DH3K.
R6N4U6	Examination and restoration of the obliterated area on Item 1 (one piece of steel bar stock bearing an obliterated area) revealed the following characters interpreted as "17DH3K".
R7CAZZ	Using physical and magnetic laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read 17DH3K.
R7WBYH	The serial number of piece of cold rolled steel bar stock, discribed in item 1, was restored and correspond to:17DH3K. [Examiner] 8/nov/2021.
R8QYGD	Examination and magnetic processing of CCBI Item 001 restored the original obliterated serial number which was determined to be 17DH3K.
REDUFW	The serial number on the metal plate (Exhibit 01) was mechanically and chemically treated and restored to read 17DH3K. The metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.
RF986B	Physical and chemical restoration of the obliterated area on the Item 1 steel bar stock revealed the following number: 17DH3K.
RHQRNJ	The alphanumeric sequence revealed in the evidence identified as E1-21-4265 is 17DH3K. It is observed that it presented alteration in the area where the impression was located, which itself could be recovered through the development process. It should be noted that the characteristics revealed through this process are not permanently recovered and wear persists on the object.
RJ7Q6N	Using magnetic and chemical restoration methods, the obliterated serial number on the piece of bar stock (item 1) was restored to read 1 7 D H 3 K.
RKHQ43	All items were visually examined. Attempts to restore the obliterated area of Q1 were made using polishing, magnetic, and chemical means of restoration. These attempts successfully restored the number: 17DH3K.
RNDEKA	The erased number was recovered using both polishing by sanding with fine grade sand paper and magnaflux. The number was successfully recovered using these techniques.
RNYQ4W	The obliterated serial number on the steel bar stock, Item 01-02, was restored to read 17DH3K. No serial number restoration attempt was made on the aluminum bar stock, Item 01-01.
RUHDVZ	The restoration techniques applied allowed to identify the previously obliterated serial number "1 7 D H 3 K".
RWBKJX	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a result of these actions, the serial number was restored to read: 17DH3K.
RZPCDX	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1, reveal the following number: 1 7 D H 3 K.
RZU77Y	One (1) ferrous piece of bar stock. Serial number obliterated through cutting/abrasion. No characters visible as received. Magnetic particle inspection resulted in a full restoration of "17DH3K". CTS number "RZU77Y" scribed on reverse for identification.

TABLE 2

WebCode	Conclusions
T48WW8	Examination resulting from: CTS & Work Order [Analyst] Exam Start Date: 09/28/21. Items of Evidence/Items Examined: Case# CTS 21-5251, Tag# CTS 21-5251. 1). Item 1: Piece of cold-rolled steel bar stock with obliterated serial number. Serial Number Restoration Results: Serial number restoration for Item 1 is: 1 7 D H 3 K. Verified by/Date: [Analyst] on 09/28/21. Disposition: Photographs: Retained in Crime Lab Unit. CTS Item(s): Retained in Firearms/Toolmarks Section. This report contains the conclusions, opinions, and/or interpretations of the examiner(s) named within this report. End of Report for [Laboratory] Case# CTS 21-5251. *This report shall not be reproduced except in full without approval of the laboratory.
T4AGRM	The serial number was determined to read: 1 7 D H 3 K.
TCF2XH	The Exhibit's surface was lightly polished, using grinding paper 120 and 600. The polished surface was then treated with Fry's reagent. The results were successfully photographed.
TDCEKB	The serial number on the bar stock was determined to be 17DH3K.
TERYME	Upon chemical etching on the steel bar (ITEM 1), six characters "17DH3K" were revealed. The six characters were found to agree in style and size with the corresponding characters stamped on the aluminium bar (Aluminum Standard).
TRGXDG	The serial number was restored and read: 17DH3K.
U3ADLC	The serial number on Item 1 was determined to be "17DH3K".
U437GV	The obliterated serial number was restored to read as 17DH3K.
UAT63H	The area of obliteration on the steel block was cleaned, polished, and chemically etched. The following full serial number was restored: 17DH3K.
UBMTKD	The obliterated area on item 1 was physically and chemically restored to read: 1 7 D H 3 K. Additional items were received, but not analyzed.
UCY47J	Lab Item(s)# 1-1: Restoration Results: 17DH3K.
UDA7RH	The obliterated serial number on Item 1A was restored to read 17DH3K. Item 1B was not examined.
ULMLRJ	Examination of the submitted cold rolled steel bar stock, labeled Item 1, found the manufacturer's original serial number to have been obliterated. Physical and magnetic processing of the cold rolled steel bar stock restored the obliterated, original serial number to read "17DH3K".
UMENEY	As a result of an attempted obliterated number restoration the following characters were observed: I7DH3K.
UR2EMP	I applied chemical etchants to the area of the obliterated serial number, resulting in the following digits being restored: 17DH3K.
UYB3PC	Using standard restoration techniques, the obliterated serial number on item 1 (cold rolled steel bar stock) was restored to read: "1 7 D H 3 K".
V2QLW6	The serial number was restored and is: 17DH3K.
V6A7RF	The serial number in the cold rolled steel bar stock: "17DH3K" were recovered.
V6VE46	Standard restoration techniques revealed the following characters on the steel bar stock in Item #1: 17DH3K.
VAHGW4	[No Conclusions Reported.]
VDPRYY	After application of acid, we were able to reveal the following characters: 17DH3K.
VFDYN2	Lab Item #1: Restoration Results: 17DH3K.
VGF93C	The serial number on the piece of bar stock, Exhibit 1, was determined to be 1 7 D H 3 K.

TABLE 2

WebCode	Conclusions
VJQ28C	The piece of metal identified internally in the Ballistics Unit as E1-21-4268. (Item 1), showed wear and/or alteration on one of its sides, so the development process is carried out on the area worn, obtaining the alphanumeric sequence: "17DH3K".
VJRYGM	Restoration results for Item 1: 17DH3K.
VLED6W	The serial number of the metal bar (001-A1-001) was restored and determined to be 17DH3K.
W273MR	Visual examination, polishing, and chemical treatment of Item 1 restored the obliterated serial number to read "17DH3K".
W2R7CZ	The area of the serial number on Item 1 was filed, sanded, polished, and subjected to magnetic particle inspection in an attempt to restore the serial number. The serial number 17DH3K was observed.
W72RAQ	1). Examination of Exhibit 1 revealed one piece of ferromagnetic steel bar stock measuring 64.49 mm long, 25.95mm wide, and 6.37mm thick. a). There is an obliterated area in the approximate center of the steel bar stock. b). The following characters were observed on the obliterated area of the Exhibit 1 steel bar stock: 1 7 D H 3 K. c). All measurements are approximates. Technical Notes: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
W778PC	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination), Microscopy (Comparison Microscope), Chemical (MPI). Serial number restoration procedures revealed the serial number on Item 1A, the steel bar stock, to be: 1 7 D H 3 K.
WAGWVL	The following characters were restored: 17DH3K.
WBFYMB	The rolled steel bar presented alteration in one area, the restoration process was applied in this area and the serie 17DH3K was restored. The restored characteristics through this process are not permanently recovered and alteration persists in the rolled steel bar.
WC39FP	Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Analysis Result: The serial number 17DH3K was restored on the item 1 steel bar stock.
WJ6MGE	The serial number of the metal piece plate, described in item 1, was restored and corresponds to: 17DH3K. [Examiner] 9/nov/2021.
WLVPM2	I examined and chemically processed Item 1A, and I determined the serial number to be 17DH3K.
WM6YDD	Through serial number restoration process the following was determinate in the item 1, was restored and correspond to: 17DH3K. [Examiner] October/19/2021.
WNKTZL	Item #1 was physically and chemically processed. Its serial number was restored to read: 1 7 D H 3 K.
WUL8LM	1). Examinations showed the serial number on Item 1 to be obliterated. The serial number was restored using various sanding and magnetic methods and was observed to be: 17DH3K.
WVZW32	In preparation for the application of acid, the area/location of the serial number on Item 1 was filed, sanded and polished. After applying Restore-Gel for steel the serial number was observed to be 17DH3K.
X9R986	I was able to restore the serial number to read 17DH3K.
XB9VG4	A Forensic procedure was performed on the machined area of the steel bar stock. A series of previously stamped characters was restored which read: 17DH3K. These characters were consistent in size and font as that used on the aluminium bar standard.
XGXR9V	Item 1-1 was determined to be a piece of ferrous metal with an obliterated area. The obliterated area was processed with standard serial number restoration chemical techniques. The serial number was restored to read: 17DH3K.

TABLE 2

WebCode	Conclusions
XKYV33	Characters restored: 17DH3K.
XLA64T	1). The following characters were observed on the obliterated area of Exhibit 1 (Metal Bar Stock): 1 7 D H 3 K.
XLAPTB	[No Conclusions Reported.]
XPV64A	The magnetic particle restoration and acid etch methods were used to restore the serial number on the 01- AA bar to read: 1 7 D H 3 K.
XX8FLV	The restored serial number on the bar stock marked "Item 1" was found to have the six characters "17DH3K".
YB6KDK	Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. RESULTS: Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a result of these actions, the serial number was restored to read 1 7 D H 3 K.
YCGEWR	Examination and mechanical processing of the submitted cold rolled steel barstock revealed that the original serial number is *7DH3K, where the * denoted an unclear character which could potentially be a 1.
YCZRAP	The obliterated surface on the steel bar stock (Item 1) was sanded and chemically processed. All characters could have been seen during the examination, nearly on same time. Some have been visible a bit better than the other ones.
YF4TL2	The piece of cold rolled steel bar stock was processed with Magnaflux and acid etching chemicals to restore the obliterated serial number. The chemical processing restored the following obliterated characters as: 17DH3K.
YFWCDA	The restored series is consistent with the comparative material provided. In addition, initially a part of the surface showed wear.
YKTZW2	The restoration results for Item #1 is "17DH3K".
YM2GLE	The serial number was restored to read: 17DH3K.
YRA4RN	1). Examination of Exhibit 1 revealed one bar of ferromagnetic metal with an obliterated area located slightly off center of the middle of the bar. a). Exhibit 1 measured approximately 68.52mm long, 25.72mm wide, and 6.52mm thick. b). The obliterated area of Exhibit 1 was restored and the following characters were observed: 1 7 D H 3 K. TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
YVXE9G	The serial number was restored to read: 1 7 D H 3 K.
YY7FT7	The serial number of item i was restored to read 17DHK3K this conclusion was verified by firearms [Examiner].
YYDHP7	The obliterated area on the piece of cold rolled steel in item 1 was chemically etched and the serial number was determined to be 17DH3K.
YZXZGK	Having used a chemical reagent to treat the affected area I was able to restore the above number.

TABLE 2

WebCode	Conclusions
Z6HJLT	The following evidence was received, analyzed on the below listed date and marked for identification as follows: Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number marked Q1. Also received was one piece of aluminum bar stock labeled as 'Aluminum Standard' for reference, not marked. The analysis of the above evidence was initiated on November 12, 2021. The evidence bar stock was visually examined. The serial number restoration process utilized initial polishing for surface preparation with a dremel tool and the application of chemical etching solutions. The serial number was restored to read: 17DH3K.
ZEKYAD	17DH3K.
ZMXFRR	Examination of Item 1 revealed an obliterated area on the steel bar stock. Standard chemical restoration techniques revealed the following character: "17DH3K". Multiple factors could have had an effect on the interpretation of the restored characters.
ZNUP73	The obliterated serial number was restored and read 17DH3K.
ZP3G46	The obliterated area on the piece of steel bar stock in item 1 was chemically etched and the serial number was determined to be 17DH3K.
ZW284L	The serial number was restored using chemical etching and found to be 17DH3K.
ZWHR2J	Item 1 was physically and microscopically examined. Item 1 was prepared and treated with chemical reagents. As a result of these actions, the serial number was restored to read "17DH3K".
ZXYFEQ	The cold rolled steel bar stock was physically and chemically processed. The serial number was restored to read: 17DH3K.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
23KNDB	Polishing	Rotary Tool	
24F983	Sanding	Sand paper	400
29TJ6J	Polishing	Dremel	
2AYLV3	Visual	HAND LENCE	
2BWPTK	Polishing	Dremel	
	Cleaning	Acetone	
2CUX4P	Polishing	Rotary Tool	
2EYM9J	Visual		
2LX8AE	Sanding	Sand paper	400 grit
2MRKLQ	Polishing		
2QNQ4W	Visual	Stereoscope	
	Sanding	Sand paper	320 and 600
	Polishing	Sand paper	1200
2TFFYB	Polishing	Dremel	
2UPUW4	Sanding	Sand paper	
2VKDY7	Polishing	Sand paper	Fine
2WY66L	Sanding	Sand paper	320
	Polishing	Dremel	
	Cleaning	Magnaflux solvent	
2WYRC8	Cleaning	Acetone	
39T7EP	Grinding	Dremel	Self-adhesive Paper at various grit sizes were utilized (from rough till fine): 80, 120, 250, 500, 800 and afterwards polishing(1200)
3D2RZ2	Polishing	Dremel	N/A
3DM32U	Polishing	Dremel	
3HUJ49	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
3J7HFZ	Cleaning	Acetone	NA
3LDQWW	Polishing	Dremel	
3N6DHE	Sanding	Dremel	400
	Sanding	Sand paper	600
	Polishing	Dremel	
3U7BL7	Sanding	Emery paper	320
	Polishing	Sand paper	1200
	Cleaning	Acetone	
3ULKMJ	Polishing	Dremel	
3VKME9	Sanding	Sand paper	150
	Polishing	Sand paper	400
3WEGAR	Polishing	Rotary Tool	polishing wheel
3ZCUWG	Visual	Stereoscope	
	Polishing	Dremel	
3ZUXHW	Grinding	Dremel	
	Polishing	Dremel	
4BD4BY	Polishing	Sand paper	400
4ETHWK	None		
4FKUD6	Grinding	Rubber grinding wheel	to remove gross marks
	Polishing	Emery paper	p400
4PCA39	Polishing	Dremel	n/a
648QR8	Polishing	Dremel	
6AQKMX	Visual	Stereoscope	
	Sanding	Sand paper	1000 grit
	Cleaning	Acetone	
6BQ2XV	Polishing	Dremel	
6DPWJX	Sanding	Sand paper	180 + 2500 Grit
	Cleaning	Acetone	
6GYHCB	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
6HQLYQ	Polishing	Dremel	
6KCVZY	Cleaning	Acetone	
	Sanding	Sand paper	P400
6KDRBU	Polishing	Rotary Tool	
6VN9RY	Polishing	Dremel	
	Visual	Stereoscope	
6YGGH9	Polishing	Dremel	
6Z9K6N	None		
778VP8	Polishing	Dremel	
78NFRB	Visual		
	Grinding	Dremel	
	Sanding	Sand paper	course
	Polishing	Sand paper	fine
79FJDP	Polishing	Dremel	
7B3PKM	Visual	Stereoscope	
	Polishing	Dremel	
7KPNFY	Visual	Stereoscope	
	Polishing	Steel wool	
	Polishing	Emery paper	
	Polishing	Dremel	
7TMEYN	Polishing	Dremel	
83LFQY	Visual	Stereoscope	
	Sanding	Sand paper	400
	Polishing	Sand paper	600
84X9P8	Polishing	Dremel	
899BMW	Visual	Steel wool	
	Cleaning	Cleaning solution (methanol & acetone)	
8C9Z4P	Polishing	Dremel	
	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
8LYQLB	Sanding	Sand paper	120
96HN7T	Visual	Magnifying glass	
	Polishing	Steel wool	
	Grinding	Dremel	
99ADZ8	Polishing	Dremel	
9QRC9Q	Polishing	Dremel	
9UAAHF	Polishing	Dremel	
9YZBDL	Polishing	Rotary Tool	
A64ZJD	Sanding	Sand paper	180
A8868E	Polishing	Dremel	
A8T6KX	Polishing	Dremel	
ANBRLU	Visual	Stereoscope	
ANUNZF	Polishing	Dremel	
ANUT9W	Polishing	Dremel	N/A
ANWFQA	Sanding	Sand paper	280, 320, 1500
AP7VBF	Visual	Stereoscope	
	Sanding	Sand paper	120, 220, 320, 400, 600, 1200
	Polishing	Steel wool	00
AVYT4D	Sanding	Sand paper	180
AYEVY4	Polishing	Dremel	
BFY6YC	Polishing	Dremel	
BGVTPF	Sanding	Sand paper	60, 220, 400
BJHVPF	Polishing	Dremel	
BRC7XQ	Visual		
	Polishing	Dremel	
BYX2WA	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
C2F723	Visual	Stereoscope	
	Sanding	Sand paper	P120 and P220 grade sand paper
	Polishing	Steel wool	
CANAWM	Polishing	Dremel	
CEKXDU	Sanding	Sand paper	80-150-360
	None		
CFVR6N	Polishing	Dremel	
CLKTFF	Visual	eyesight	
	Polishing	Dremel	
CQD9XV	Polishing	Sand paper	80-120
CR9ZU2	Polishing	Dremel	
CZLRJY	Sanding	Sand paper	80, 220 and 1000
CZMNRA	Visual		
CZPGNW	Grinding	Acetone	
	Cleaning		
D9VB6M	Polishing	Steel wool	
DCRGMT	Sanding	Sand paper	P240 & P600
DGHQWR	Sanding	Sand paper	
	Sanding	Steel wool	
DHXX9Z	Polishing	Dremel	
DK3TPH	Polishing	Dremel	
DK6QA8	Sanding	Sand paper	220
DK7LWJ	Polishing	Dremel	
DMTDQ2	Visual	Stereoscope	
	Polishing	Rotary Tool	
DNJKP6	Sanding	Emery paper	
	Polishing	Dremel	
DNKFCG	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
DTK2DE	Visual		
DUBQME	Polishing	Dremel	
DV79NG	Visual	Stereoscope	
DYN2QP	Polishing	Rotary Tool	600
DYPX2L	Polishing	Dremel	
E6QE2T	Polishing	Dremel	
EBV97M	Visual	Naked eye	
	Polishing	Dremel	
	Cleaning	Acetone	
	Visual	Stereoscope	
EPFTLA	Polishing	Dremel	
EQB8BM	Polishing	Steel wool	N/A
F7GKUA	Sanding	Sand paper	600
F7JK7Q	Polishing	Dremel	N/A
FHPVDD	Polishing	Dremel	
FJ6XJL	Polishing	Dremel	
FMKZB4	Polishing	Dremel	N/A
FT9XNX	Polishing	Rotary Tool	
FTB27A	Polishing	Dremel	
	Visual	Stereoscope	
FVRDXK	None		
G3APNC	Visual	Stereoscope	
G7B62N	Sanding	Stereoscope	1200
GAFEAQ	Visual	Stereoscope	
	Polishing	Abrasive rubber polishing blocks	
GATQ7A	Grinding	Dremel	
GBAEHH	Polishing	Sand paper	400, 800, 1500, 3000
	Cleaning	Acetone	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
GBN668	Polishing	Dremel	
GCJJUK	Sanding	Sand paper	
GJ3M2M	Polishing	Dremel	Fine & Extra Fine
GM2ZND	None		
GM4QTA	None		
	Visual	Microscope	
GMJFAM	Sanding/Polishing/Cleaning	Sand paper/Rotary Tool/ Acetone	400 and 1200
GRVZ2M	Visual	Stereoscope	
	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Sand paper	P400
	Cleaning	Acetone	
	Visual	Stereoscope	
GZMFPR	Sanding	Sand paper	coarse and fine
H6CG6B	None		
HFGCGN	Polishing	Dremel	2000
HH67DA	Visual	Microscope	
	Polishing	Dremel	
HJU84D	None		
HL4H9A	Polishing	Dremel	Unknown
HQE7XR	Visual	Stereoscope	N/A
	Sanding	Sand paper	100 & 220
HQTR69	Polishing	Rotary Tool	
J9BBXQ	Visual	Microscope	
	Sanding	Emery paper	400 Grit
JD7CN8	Visual	Stereoscope	
	Sanding	Sand paper	600
	Polishing	Steel wool	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
JEZZ83	Visual		
	Polishing	Dremel	
JHHPK8	Polishing	Flitz polish	
JV7UUP	Polishing	Dremel	
JY7Z9V	Polishing	Rotary Tool	
K66G7Y	Visual		
K8EYFC	Visual		
	Polishing	Dremel	
KBE3AJ	Polishing	Dremel	N/A
KD6UCU	Grinding	Dremel	
KEWXYA	Polishing	Dremel	
KF93NE	Visual	Stereoscope	
KPD28N	Polishing	Sand paper	300
KTGD3A	Polishing	Stereoscope	
KY263U	Sanding	Sand paper	80
L26JGT	Polishing	Dremel	
L3DBCA	Visual	Microscope	
L8CJMB	Polishing	Dremel	
LHAZGY	Polishing	Dremel	
LJ7ZCC	Visual	Stereoscope	
	Sanding	Emery paper	400
	Sanding	Sand paper	1500
	Polishing	Metal Paste Polish	Metal Paste Polish
M44EFL	Polishing	Steel wool	
MH3KTK	Polishing	Sand paper	P800 - P1200
MH8KUQ	Polishing	Sand paper	P320
MNVA99	Polishing	Dremel	
MZ6F8W	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
MZ9CPZ	None		
MZNMNT	Sanding	Sand paper	100C
	Polishing	Dremel	
N2QPAA	Cleaning	Acetone	
N3PLA6	Visual	Stereoscope	
	Polishing	Dremel	
N6HF6N	Visual	Stereoscope	
	Visual	MAGNETIC YOKE	
	Polishing	Dremel	120
NJ9TUF	Polishing	Dremel	400
NL44EJ	Polishing	Sand paper	80, 220, 320 y 600
NL7GTJ	Sanding	Sand paper	120
P39FFD	Sanding	Emery paper	240 grit
	Sanding	Emery paper	400 grit
	Sanding	Emery paper	800 grit
	Sanding	Emery paper	1200 grit
	Polishing	Cut and Polish liquid	
PCAJ3H	Polishing	Dremel	100 - 120 - 180
PDPZXP	Sanding	Sand paper	120/N21
PEG3K6	Polishing	Steel wool	
PG3JM6	Polishing	Sand paper	3/0 & 4/0
	Polishing	Rotary Tool	
PK4XH3	Polishing	Dremel	
PKQTYQ	Visual		
	Visual	Stereoscope	
	Sanding	Sand paper	220
PPKB9G	None		
	Grinding	Dremel	
	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
PRPHFV	Visual	Stereoscope	
	Polishing	Dremel	**very light polishing performed
PVNUCV	Polishing	Dremel	
PVQTJ3	None		
PWHF6L	Sanding	Sand paper	1000
PWJCDW	Polishing	Dremel	#74 Extra Fine
QJRHN2	Visual	Stereoscope	
	Sanding	Sand paper	120 grit
	Sanding	Sand paper	220 grit
	Sanding	Sand paper	600 grit
QKKW78	Polishing	Dremel	
	Cleaning	Acetone	
QMRQUW	Polishing	Dremel	
QTXDUD	Grinding	Rotary Tool	40
	Grinding	Rotary Tool	120
	Sanding	Sand paper	800
	Visual	oblique lighting / magnified glass	
QWXJAJ	Polishing	Rotary Tool	Rubber disc.
	Sanding	Emery paper	P400
	Visual	Microscope	
R4BHY9	Visual		
	Polishing	Dremel	extra fine
R6N4U6	Visual	Stereoscope	
	Polishing	Dremel	
R7CAZZ	Sanding	Sand paper	100 & 320
R7WBYH	Visual	Microscope	
	Polishing	Sand paper	220
R8QYGD	Polishing	Dremel	
REDUFW	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
RF986B	Sanding	Sand paper	400
RHQRNJ	Sanding	Sand paper	220, 360, 1000
RJ7Q6N	Polishing	Dremel	180
RKHQ43	Polishing	Dremel	
RNDEKA	Sanding	Sand paper	
RNYQ4W	Polishing	Dremel	N/A
RUHDVZ	Cleaning	Acetone	
	Polishing	Steel wool	
RWBKJX	Sanding	Sand paper	#220 and #320
	None	Steel wool	
RZPCDX	Visual	Stereoscope	
	None	Microscope	
	Sanding	Sand paper	1000
	Polishing	cotton swab	
RZU77Y	None	No Tool Used	N/A
T48WW8	Visual	Stereoscope	
	Polishing	Dremel	
	Grinding	Dremel	
	Sanding	Sand paper	Unknown
	Cleaning	Acetone	
T4AGRM	Grinding	Dremel	
	Sanding	Sand paper	180, 220, and 600
TCF2XH	Sanding	Sand paper	120
	Sanding	Sand paper	600
	Cleaning	Acetone	
TDCEKB	None		
TERYME	Visual	Microscope	
	Cleaning	mixture of acetone, ethyl acetate and petroleum ether	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
TRGXDG	None	Filing - Hand File	N/A
	Sanding	Sand paper	P240
	Sanding	Sand paper	P800
	Sanding	Sand paper	Ultra Fine
	Sanding	Sand paper	P240
	Sanding	Sand paper	P800
	Sanding	Sand paper	Ultra Fine
	Sanding	Sand paper	P240
	Sanding	Sand paper	P800
	Sanding	Sand paper	Ultra Fine
	Cleaning	Ethanol	N/A
U3ADLC	None		
U437GV	Polishing	Dremel	
UAT63H	Visual	Stereoscope	
UBMTKD	Polishing	Dremel	Cratex abrasive wheel (Fine texture)
UCY47J	Polishing	Rotary Tool	
	Cleaning	MagnaFlux SKC-S	
UDA7RH	Polishing	Dremel	N/A
ULMLRJ	Grinding	Dremel	N/A
UMENEY	Polishing	Steel wool	
UR2EMP	Sanding	Emery paper	240 & 360
UYB3PC	Polishing	Dremel	
V2QLW6	Polishing	Steel wool	
	Sanding	Sand paper	1000 grit
V6A7RF	Sanding	Sand paper	80
V6VE46	Visual	Stereoscope	
	Polishing	Dremel	
VAHGW4	Visual		
	Sanding	Sand paper	320
	Cleaning	Acetone	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
VDPRYY	Sanding	Sand paper	160
	Cleaning	Acetone	
VFDYN2	Polishing	Dremel	
VGF93C	Polishing	Dremel	
VJQ28C	Sanding	Sand paper	220,400
	Polishing	Sand paper	1000
VJRYGM	Visual	Stereoscope	
VLED6W	Visual	Microscope	600
	Sanding	Sand paper	600
W273MR	Polishing	Dremel	
W2R7CZ	Visual	Stereoscope	
	Sanding	Sand paper	82, 220, 1000,1500
	Polishing	Emery paper	
W72RAQ	None		
W778PC	Visual		
WAGWVL	Visual		
WBFYMB	Sanding	Sand paper	#80, 220, 1000
WC39FP	Visual	Stereoscope	
	Polishing	Dremel	
	Cleaning	Acetone	
	None		
WJ6MGE	Visual	Stereoscope	N/A
	Sanding	Sand paper	100
WLVPM2	Polishing	Dremel	
WM6YDD	Polishing	Sand paper	100/200/500
WNKTZL	Polishing	Dremel	
WUL8LM	Sanding	Emery paper	80

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
WVZW32	Sanding	Sand paper	120, 220, 1000, 1500, 3000
	Polishing		
X9R986	Sanding	Emery paper	240, 400, 800 and 1200
	Polishing	cloth	Autosol
	Cleaning	Acetone	Liquid
XB9VG4	Sanding	Emery paper	600, 800, 1200
XGXR9V	Polishing	Dremel	
XKYV33	Polishing	Rotary Tool	
XLA64T	Visual	Stereoscope	
XLAPTB	Grinding	Dremel	80
	Cleaning	Acetone	
XPV64A	Polishing	Rotary Tool	
XX8FLV	Sanding	Sand paper	360, 800
YB6KDK	Visual	Stereoscope	
	Visual	Microscope	
	Cleaning	Steel wool	
	Polishing	Dremel	
YCGEWR	Polishing	Sand paper	P400
YCZRAP	Sanding	Sand paper	P400, wet
YF4TL2	Visual	Stereoscope	
	Polishing	Steel wool	
	Sanding	Sand paper	240 grit
YFWCDA	Sanding	Sand paper	360
	Cleaning	Acetone	
YKTZW2	Visual	camera	
	Polishing	Dremel	
YM2GLE	Sanding	Sand paper	320
	Polishing	Dremel	
YRA4RN	Sanding	Sand paper	180 followed by 400

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
YVXE9G	Sanding	Dremel	P180
YY7FT7	Visual	Stereoscope	
	Sanding	Sand paper	280
	Polishing	Dremel	320
	Cleaning	Acetone	
YYDHP7	Visual	Stereoscope	
	Polishing	Dremel	polishing wheel
YZXZGK	Sanding	Rotary Tool	400 - 800
Z6HJLT	Polishing	Dremel	
ZEKYAD	Visual		
	Polishing	Dremel	
ZMXFRR	Visual		
	Polishing	Dremel	#500 Medium Soft
ZNUP73	Visual	Magnifying light lamp	
	Sanding	Emery paper	240 Grit
	Polishing	Rotary Tool	
ZP3G46	Visual	Stereoscope	
	Polishing	Dremel	425
ZW284L	Sanding	Dremel	100, 600
	Polishing	Dremel	
ZWHR2J	Polishing	Dremel	
	Polishing	Sand paper	1200
	Polishing	Dremel	
ZXYFEQ	Polishing	Dremel	Fine Texture Cratex Wheel

Response Summary

Participants: 265

Sample Preparation

Visual Method:	72
Sanding Method:	80
Polishing Method:	171
None:	21

Note: The total number of preparation methods used is not equivalent to the total number of participants because some participants used more than one sample preparation method.

Recovery Methods

(listed in order of use)

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
23KNDB	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Approx. 10 minutes
24F983	Fry's Reagent	3 applications - 2 minutes each
29TJ6J	Turner's Reagent	
	Fry's Reagent	
2AYLV3	Turner's Reagent	10 SECONDS
	Fry's Reagent	10 SECONDS
2BWPTK	MagnaFlux	
	Acidic Ferric Chloride	few minutes
2CUX4P	Fry's Reagent	30 minutes
2EYM9J	MagnaFlux	
	50% Diluted Fry's	1 minute or less
	25% Nitric Acid	1 minute or less
	MagnaFlux	
2LX8AE	Acidic Ferric Chloride	30-45 sec several times
	Phosphoric/Nitric Acid	30-45 sec several times
	Fry's Reagent	30-45 sec several times
2MRKLQ	Fry's Reagent	45 minutes
2QNQ4W	Acidic Ferric Chloride	15 min
2TFFYB	Fry's Reagent	15 seconds each application
	Acidic Ferric Chloride	15-30 seconds each application
	Nitric Acid	15 - 30 seconds each application
	Remington Oil	Applied after restoration was complete and left on
	Acetone	Used to clean and wiped off
2UPUW4	Magnetic Particle Inspection (MPI)	acero
2VKDY7	Fry's Reagent	3-5 minutes
	25% Nitric Acid Solution	3-5 minutes
2WY66L	MagnaFlux	
2WYRC8	Acidic Ferric Chloride	2 MINUTES
39T7EP	Valenski Reagent	Applying by wiping - about 10 minutes.
	Fry's Reagent	Applying by wiping - about 5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
3D2RZ2	Fry's Reagent	30 Seconds
3DM32U	MagnaFlux	
	Fry's Reagent	multiple times, total approx 3 minutes
	20% Nitric Acid	one time, 10-15 seconds
3HUJ49	MagnaFlux	
	Fry's Reagent	5 seconds each time used
3J7HFZ	Acid Etch Method	15 minutes
3LDQWW	Fry's Reagent	one swab of Fry's for 30 seconds then removed.
	MagnaFlux	
3N6DHE	MagnaFlux	
	Turner's Reagent	~ 5 seconds per swab
	Davis Reagent	~ 5 seconds per swab
	Fry's Reagent	~ 5 seconds per swab
3U7BL7	Electro-acid	
	MagnaFlux	
3ULKMJ	MagnaFlux	
	Acid Etch Method	~1 minute
3VKME9	MagnaFlux	
3WEGAR	MagnaFlux	
	Fry's Reagent	15 minutes
3ZCUWG	MagnaFlux	
	Acid Etch Method	25% Nitric, 10-15 seconds
	Acidic Ferric Chloride	10-15 seconds
3ZUXHW	The sample was eaten away chemical solution CuCL*2H2O + HCl + H2O	Time 30 min.
4BD4BY	Fry's Reagent	6 minutes
4ETHWK	MagnaFlux	
4FKUD6	Fry's Reagent	Seven (7) minutes
4PCA39	MagnaFlux	n/a
648QR8	Magnetic Particle Inspection (MPI)	
6AQKMX	Fry's Reagent	
6BQ2XV	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	4 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
6DPWJX	MagnaFlux	N/A
	Fry's Reagent	1 hour 30 mins
6GYHCB	MagnaFlux	
	Fry's Reagent	5 min.
	MagnaFlux	
	Fry's Reagent	5 min.
6HQLYQ	Fry's Reagent	5 min left on then wiped with q-tip
6KCVZY	Turner's Reagent	15mins
	Fry's Reagent	40mins
6KDRBU	MagnaFlux	
	Fry's Reagent	
6VN9RY	Davis	approx. 30 seconds
	Turner's Reagent	approx. 30 seconds
	Fry's Reagent	approx. 15 to 20 seconds x 6 applications
6YGGH9	Fry's Reagent	< than 1 hour
	Turner's Reagent	< than 1 hour
6Z9K6N	25 % Nitric Acid	15 to 20 seconds at a time
	Davis' Reagent	15 to 20 seconds at a time
778VP8	MagnaFlux	
	Acidic Ferric Chloride	10 minutes
	Fry's Reagent	5 minutes
	25% Nitric Acid	10 minutes
78NFRB	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	30 mins
	Davis'	30 mins
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30 mins
79FJDP	Fry's Reagent	4-5 min
	Acidic Ferric Chloride	wiped on and off
	25% Nitric Acid	wiped on and off
7B3PKM	Turner's Reagent	1-2 seconds per swipe
	Fry's Reagent	1-2 seconds per swipe
7KPNFY	MagnaFlux	
	Fry's Reagent	swabbed with wet swab
	Davis Reagent	approximately 1 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
7TMEYN	Fry's Reagent	5 minutes total
83LFQY	MagnaFlux	
84X9P8	Fry's Reagent	25 minutes of wiping/rubbing
899BMW	Davis Reagent	8 minutes
	Turner's Reagent	8 minutes
	Fry's Reagent	6 minutes
	Fry's Reagent	10 minutes
8C9Z4P	Acid Etch Method	25% Swiped
	Fry's Reagent	Swiped
	MagnaFlux	
8LYQLB	Fry's Reagent	30 minutes swabbing and reapplying
96HN7T	Magnetic Particle Inspection (MPI)	
	Davis Reagent	5 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	15 minutes
99ADZ8	Fry's Reagent	5 minutes
9QRC9Q	MagnaFlux	
	Fry's Reagent	
	Acidic Ferric Chloride	under 1 minute per swab
	20% Nitric Acid	under 1 minute per swab
9UAAHF	Cupric Ammonium Chloride	Approximately 20 minutes
	Fry's Reagent	2 minutes
9YZBDL	MagnaFlux	
	Fry's Reagent	2 minutes
A64ZJD	MagnaFlux	
A8868E	MagnaFlux	
	Davis	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute
A8T6KX	Fry's Reagent	~15 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
ANBRLU	Davis	a minute or two
	Fry's Reagent	a few minutes
	Nitric Acid	just swiped to highlight
	Fry's Reagent	swiped over multiple times
	Turner's Reagent	used to attempt to highlight
ANUNZF	Fry's Reagent	~25 minutes (with frequent rubbing)
ANUT9W	Davis' Reagent	applied over 15 minutes
	MagnaFlux	N/A
	Davis' Reagent	applied over 10 minutes
	MagnaFlux	for photograph purposes
ANWFQA	Fry's Reagent	1 or 2 min. at a time.
AP7VBF	Davis Reagent	3 minutes
	Turner's Reagent	3 minutes
	Fry's Reagent	15 minutes
	Turner's Reagent	1 minute
AVYT4D	MagnaFlux	
AYEVY4	MagnaFlux	
	Acidic Ferric Chloride	swiped with cotton swabs
	20% Nitric Acid	swiped with cotton swabs
	Fry's Reagent	swiped with cotton swabs
BFY6YC	MagnaFlux	
	Turner's Reagent	1-30 MIN
	Fry's Reagent	1-30 MIN
	DAVIS	1-30 MIN
	forts	1-30 min
BGVTPF	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	2 hours total
	Fry's Reagent	30 minutes
	Turner's Reagent	30 minutes
BJHVPF	MagnaFlux	
	Davis Reagent	25 seconds
	Turner's Reagent	30 seconds
BRC7XQ	MagnaFlux	
	Fry's Reagent	Swabbed repeatedly every few seconds, then wiped away to view surface
BYX2WA	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
C2F723	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Briefly - less than a minute
	Turner's Reagent	Briefly - less than a minute
	Davis Reagent	Briefly - less than a minute
CANAWM	Fry's Reagent	less than 5 minutes
	20% Nitric Acid	less than 5 minutes
	MagnaFlux	less than 5 minutes
CEKXDU	Acid Etch Method	5min
	Fry's Reagent	10min
CFVR6N	Davis Reagent	continued swipes for 5 minutes
	Turner's Reagent	continued swipes for 10 minutes
	Fry's Reagent	continued swipes for 3 minutes
	Turner's Reagent	continued swipes for 5 minutes
CLKTFF	Turner's Reagent	15 minutes
	Dremel	
	Turner's Reagent	20 minutes
	Dremel	
	Turner's Reagent	20 minutes
	Dremel	
	Davis' Reagent	15 minutes
	Dremel	
	Davis' Reagent	20 minutes
	Davis' Reagent	20 minutes
	Dremel	
	Davis' reagent	20 minutes
	Dremel	
	Davis' reagent	20 minutes
	HNO3	immediately rinsed with water
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
	Davis' reagent	20 minutes
CQD9XV	Acid Etch (Nitric Acid Solution 25% & Modified Fry's Solution)	Two minutes alternatively

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
CR9ZU2	MagnaFlux	
	Fry's Reagent	swabbed area with cotton swab <5 minutes
	20% Nitric Acid	swabbed area with cotton swab <2 minutes
CZLRJY	MagnaFlux	
CZMNRA	Fry's Reagent	3 minutes
	Acidic Ferric Chloride	5 mintues
	25% Nitric Acid	5 minutes
CZPGNW	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
D9VB6M	Fry's Reagent	5 minutes
	Turner's Reagent	5 minutes
	Davis' Reagent	5 minutes
	25% Nitric Acid	8 minutes
DCRGMT	Magnetic Particle Inspection (MPI)	
DGHQWR	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
DHXX9Z	Fry's Reagent	
DK3TPH	Turner's Reagent	5 min
	Fry's Reagent	5 min
DK6QA8	Fry's Reagent	10 minutes
DK7LWJ	Fry's Reagent	approx 1 to 2 min each application
	MagnaFlux	approx 2 min
DMTDQ2	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	undetermined
DNJKP6	Fry's Reagent	30 min.
DNKFCG	Fry's Reagent	Repeated ~10 min applications for approximately 1.5-2 hours
DTK2DE	MagnaFlux	
	Fry's Reagent	5 minutes
DUBQME	MagnaFlux	
	Fry's Reagent	Material was swabbed with Fry's
	25% Nitric Acid	Material was swabbed with Nitric Acid
	Remoil	Remoil was added after restoration

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
DV79NG	Magnetic Particle Inspection (MPI)	2 minutes
	Davis Reagent	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute
DYN2QP	Magnetic Particle Inspection (MPI)	
DYPX2L	Fry's Reagent	15 minutes
	MagnaFlux	20 minutes
	20% Nitric Acid	5 minutes
E6QE2T	MagnaFlux	
EBV97M	MagnaFlux	
	Fry's Reagent	1-3 minutes
	20 % Nitric Acid	1-3 minutes
	Acidic Ferric Chloride	1-3 minutes
	Electro-magnetic	
EPFTLA	MagnaFlux	
EQB8BM	Fry's Reagent	Twenty minutes
F7GKUA	Fry's Reagent	Various lengths of time
F7JK7Q	MagnaFlux	
	Davis Reagent	15 minutes
FHPVDD	MagnaFlux	
	Acid Etch Method	Davis - several minutes using a swabbing technique.
FJ6XJL	Acid Etch Method	15-30 second increments of application (alternating between Fry's and Nitric Acid)
	Fry's Reagent	15-30 second increments of application (alternating between Fry's and Nitric Acid)
FMKZB4	Acid Etch Method	short duration with aggitation
FT9XNX	Davis reagent	<1 minute
	Fry's Reagent	~30 minutes
FTB27A	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	2 MINUTES
	Turner's Reagent	2 MINUTES
	DAVIS	2 MINUTES

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
G3APNC	Magnetic Particle Inspection (MPI)	
	Davis Reagent	Less than a minute
	Turner's Reagent	Less than a minute
	Fry's Reagent	Less than a minute
G7B62N	MagnaFlux	
GAFEAQ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	20 seconds or less
	Turner's Reagent	20 seconds or less
	Davis' Reagent	20 seconds or less
	25% nitric acid	10 seconds or less
GATQ7A	MagnaFlux	
	Fry's Reagent	
GBAEHH	MagnaFlux	
GBN668	MagnaFlux	
GCJJUK	MagnaFlux	
GJ3M2M	Acid Etch Method	3 - 5 minutes, multiple times
GM2ZND	MagnaFlux	
	Polishing with dremel	
	Fry's Reagent	3 minutes w/swabbing
GM4QTA	MagnaFlux	
	Davis	Several minutes
	Turner's Reagent	several minutes
	Fry's Reagent	several minutes
GMJFAM	Fry's Reagent	Varying time intervals over a 1 hour period
	Magnetic Particle Inspection (MPI)	
GRVZ2M	Fry's Reagent	10 minutes 15 seconds
GZMFPR	Magnetic Particle Inspection (MPI)	
H6CG6B	Fry's Reagent	~10-15 minutes
HFGCGN	MagnaFlux	Not

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
HH67DA	MagnaFlux	
	20% Nitric Acid	1 min
	Acidic Ferric Chloride	1 min
	Fry's Reagent	30 sec
	Acidic Ferric Chloride	30 sec
	H2O	10 sec
	MagnaFlux	
HJU84D	MagnaFlux	
	Fry's Reagent	Seconds
	Nitric Acid	Seconds
HL4H9A	MagnaFlux	N/A
	Acid Etch Method	20 % Nitric Acid (5) minutes
	Acid Etch Method	Ferric chloride (5) minutes
	Fry's Reagent	(5) minutes
HQE7XR	Davi's Reagent	20 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	10 minutes
HQTR69	Fry's Reagent	10-20 seconds
	Turner's Reagent	10-20 seconds
	Davis	10-20 seconds
	Acidic Ferric Chloride	10-20 seconds
	Ferric Chloride	10-20 seconds
J9BBXQ	Fry's Reagent	2 Minutes
JD7CN8	Davis Reagent	2 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	5 minutes
	Steel Wool	
	Fry's Reagent	8 minutes
JEZZ83	Turner's Reagent	constant swiping of chemical
	Davis	constant swiping of chemical
	Fry's Reagent	a couple minutes, with constant swiping in between
JHHPK8	Turner's Reagent	10 seconds
	Fry's Reagent	10 seconds
	Magnetic Particle Inspection (MPI)	15 seconds
JV7UUP	Acid Etch Method	2 min
	Electro-acid	2 min

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
JY7Z9V	Fry's Reagent	approximately 10 minutes
K66G7Y	Fry's Reagent	Swiping using cotton swabs for approximately 30 minutes
	Turner's Reagent	Swiping using cotton swabs for approximately 5 minutes
K8EYFC	Davis	swabbing ~20seconds
	Turner's Reagent	swabbing ~20seconds
	Fry's Reagent	swabbing ~20seconds
	Turner's Reagent	swabbing ~20seconds
	Nitric acid	swabbing ~15seconds
	Fry's Reagent	swabbing ~20seconds
	Davis	swabbing ~20seconds
KBE3AJ	Fry's Reagent	2 minutes
	Turner's Reagent	2 minutes
	10% nitric acid	2 minutes
KD6UCU	Fry's Reagent	Not measured
	MagnaFlux	
KEWXYA	Fry's Reagent	
	25% Nitric Acid	
KF93NE	MagnaFlux	
	Acidic Ferric Chloride	2 minutes
	Acid Etch Method	20% Nitric Acid - 1 minute
	Fry's Reagent	1 minute
KPD28N	Acidic Ferric Chloride	1 min
KTGD3A	Turner's Reagent	
	Fry's Reagent	
KY263U	MagnaFlux	
L26JGT	Fry's Reagent	
	Magnetic Particle Inspection (MPI)	
L3DBCA	MagnaFlux	
	Fry's Reagent	2 minutes
L8CJMB	MagnaFlux	
	Fry's Reagent	Applied over a few minutes time

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
LHAZGY	Davis's Reagent	1 min
	Turner's Reagent	3 min
	Fry's Reagent	3 min
	Fry's Reagent	2 min
	Fry's Reagent	3 min
LJ7ZCC	Electro-magnetic	
M44EFL	Fry's Reagent	1 minute
MH3KTK	Acid Etch Method	15 - 20 min.
MH8KUQ	Magnetic Particle Inspection (MPI)	N/A
MNVA99	Fry's Reagent	1 minute overall
	Acidic Ferric Chloride	20 seciond s
	Distilled water (neutralizing agent)	3 minutes overall
MZ6F8W	MagnaFlux	
MZ9CPZ	Fry's Reagent	1 minute
MZNMNT	MagnaFlux	
	Ferric Chloride	3-5 minutes
N2QPAA	Acid Etch Method	15 minute
N3PLA6	Davis Reagent	A few seconds per swab (5 swabs)
	Turner's Reagent	A few seconds per swab (5 swabs)
	Fry's Reagent	A few seconds per swab (5 swabs)
N6HF6N	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
NJ9TUF	MagnaFlux	N/A
NL44EJ	MagnaFlux	10 minutes
	Fry's Reagent	2 minutes
	Acid Etch Method	5 minutes
	DAVID	1 Minute
NL7GTJ	Fry's Reagent	~15 MINUTES TOTAL
	Magnetic Particle Inspection (MPI)	
P39FFD	Fry's Reagent	10 minutes
PCAJ3H	MagnaFlux	
PDPZXP	MagnaFlux	N/A

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
PEG3K6	Fry's Reagent	no more than five minutes
	Turner's Reagent	no more than five minutes
	Davis	no more than five minutes
PG3JM6	Fry's Reagent	
	Mipro acier	
PK4XH3	Davis Reagent	~3 minutes
	Turner's Reagent	~3 minutes
	Fry's Reagent	~5 minutes total
PKQTYQ	Fry's Reagent	Three intervals of approximately 2 minutes.
PPKB9G	MagnaFlux	
PRPHFV	MagnaFlux	
PVNUCV	MagnaFlux	
PVQTJ3	MagnaFlux	
	Fry's Reagent	continuous application
	50% Nitric Acid	continuous application
	MagnaFlux	
PWHF6L	MagnaFlux	
PWJCDW	MagnaFlux	
QJRHN2	Acid Etch Method	Davis Reagent - 2 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	10 minutes
QKKW78	MagnaFlux	
	Fry's Reagent	10 seconds
QMRQUW	MagnaFlux	
	Davis	5 min
	Turner's Reagent	5 min
	Fry's Reagent	5 min
QTXDUD	Fry's Reagent	5 mins each period for 3 periods
	Fry's Reagent	10 min then complete
QWXJAJ	Fry's Reagent	Rapid response, approximately 3 -4 minutes
R4BHY9	Fry's Reagent	5 minutes
	Fry's Reagent	6 minutes
	Fry's Reagent	5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
R6N4U6	Fry's Reagent	10 min
R7CAZZ	MagnaFlux	
R7WBYH	Acid Etch Method	
	Davis Reagent	10 min
	Turner's Reagent	13 min
	Fry's Reagent	15
R8QYGD	Magnetic Particle Inspection (MPI)	
REDUFW	MagnaFlux	One minute
	Davis	One minute
	Turner's Reagent	One minute
	Fry's Reagent	One minute
	Turner's Reagent	One minute
RF986B	Fry's Reagent	60 seconds
RHQRNJ	MagnaFlux	30 min
	Fry's Reagent	5 min
RJ7Q6N	MagnaFlux	
	Fry's Reagent	15 seconds
	Nitric Acid	15 seconds
RKHQ43	MagnaFlux	
	Fry's Reagent	5 Minutes
RNDEKA	MagnaFlux	
RNYQ4W	MagnaFlux	N/A
RUHDVZ	Fry's Reagent	About tirthy minutes
RWBKJX	Fry's Reagent	20-30 seconds then acid removed and repeated 4-5 times
RZPCDX	Fry's Reagent	3-5 seconds in increments over 45-60 minutes
RZU77Y	Magnetic Particle Inspection (MPI)	N/A
T48WW8	Fry's Reagent	Multiple applications at a variety of intervals for a total of 30 min
	Acid Etch Method	Nitric - Multiple applications at a variety of intervals for a total of 30 min
T4AGRM	Fry's Reagent	30 min
	Magnetic Particle Inspection (MPI)	10 min

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
TCF2XH	Fry's Reagent	The polished surface was treated with Fry's reagent for about 20 minutes. The process (using Fry's Reagent) was alternate repeatedly several times, till the serial number was restored completely.
TDCEKB	Magnetic Particle Inspection (MPI)	
	Davis	~30 seconds
	Fry's Reagent	~30 seconds
	Turner's Reagent	~ 10 seconds
	Fry's Reagent	~30 seconds
	Turner's Reagent	~ 10 seconds
TERYME	Fry's Reagent	about 15 minutes
TRGXDG	Fry's Reagent	11 minutes total
U3ADLC	Magnetic Particle Inspection (MPI)	
	Polish	
	Davis	~30-45 seconds
	Davis	~30-45 seconds
	Magnetic Particle Inspection (MPI)	
U437GV	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 minutes
UAT63H	Acid Etch Method	Davis reagent, applied for ~3min
UBMTKD	MagnaFlux	N/A
	Fry's Reagent	~ 5 min.
UCY47J	MagnaFlux	
	MagnaFlux	
UDA7RH	Fry's Reagent	15-20 seconds per application, constant swiping
ULMLRJ	MagnaFlux	N/A
UMENEY	25% Nitric Acid	Approximately 2 minutes
	Davis Reagent	Between 2 - 3 minutes
	Turner's Reagent	Approximately 2 -3 minutes
	Fry's Reagent	Approximately 4 -5 minutes
UR2EMP	Fry's Reagent	10 minutes
UYB3PC	MagnaFlux	
V2QLW6	MagnaFlux	Restored after Magnaflux
	Acid Etch Method	Frye's Reagent (5 min)-restored again

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
V6A7RF	MagnaFlux	N/A
V6VE46	MagnaFlux	
	Fry's Reagent	~10 minutes
	20% Nitric Acid	~10 minutes
VAHGW4	Acid Etch Method	ca 10 min
VDPRYY	Fry's Reagent	10 minutes
VFDYN2	MagnaFlux	
	Nitric Acid	2 minutes
	Acidic Ferric Chloride	2 minutes
	Fry's Reagent	2 minutes
VGF93C	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
VJQ28C	MagnaFlux	--
VJRYGM	MagnaFlux	
	Acidic Ferric Chloride	5 minutes
	25% Nitric Acid	5 minutes
	Fry's Reagent	3 minutes
VLED6W	Fry's Reagent	3 seconds
	Acid Etch Method	3 seconds
W273MR	Turner's Reagent	5 minutes
	Fry's Reagent	2 minutes
	MagnaFlux	
W2R7CZ	Magnetic Particle Inspection (MPI)	
W72RAQ	MagnaFlux	n/a
W778PC	Magnetic Particle Inspection (MPI)	
	MagnaFlux	
WAGWVL	MagnaFlux	
	Acidic Ferric Chloride	5
	Fry's Reagent	5
WBFYMB	Fry's Reagent	3 minutes
	MagnaFlux	
WC39FP	MagnaFlux	
	Davis	briefly

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
WJ6MGE	Davis Reagent	5 min
	Turner's Reagent	10 min
	Fry's Reagent	10 min
WLVPM2	MagnaFlux	less than 5 min
	Fry's Reagent	less than 5 min
WM6YDD	Davis Reagent	30 minutes
	Turner's Reagent	30 minutes
	Fry's Reagent	20 minutes
WNKTZL	Fry's Reagent	25 min
WUL8LM	MagnaFlux	
WVZW32	Acid Etch Method	20 minutes
X9R986	Fry's Reagent	6 min
XB9VG4	Fry's Reagent	4 x 2 minutes
XGXR9V	Fry's Reagent	3 minutes
XKYV33	MagnaFlux	
	Fry's Reagent	~2 min
XLA64T	Fry's Reagent	2 minutes per application
XLAPTB	Electro-acid	2 minutes
XPV64A	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	2 min.
	25% Nitric Acid	1 min.
XX8FLV	Fry's Reagent	about 5 seconds
YB6KDK	Acid Etch Method	10% HCL - 10 seconds
	Acid Etch Method	30% HCL - 10 seconds
	Acid Etch Method	HCL - 15 seconds
	Acid Etch Method	Ferric Chloride - 90/120 seconds
	Acidic Ferric Chloride	60 seconds
YCGEWR	MagnaFlux	
YCZRAP	Acid Etch Method	different acids, all in all about 15 minutes
YF4TL2	MagnaFlux	
	Fry's Reagent	2-3 Seconds

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
YFWCDA	MagnaFlux	
	Fry's Reagent	10 min
YKTZW2	MagnaFlux	
	Fry's Reagent	swipped with cotton tip
	20% Nitric Acid	swipped with cotton tip
YM2GLE	MagnaFlux	
	Fry's Reagent	Total ~5min (30 sec increments)
	Acidic Ferric Chloride	Total ~5min (30 sec increments)
	10% Nitric Acid	Total ~5min (30 sec increments)
	Phosphoric Acid	Total ~5min (30 sec increments)
YRA4RN	MagnaFlux	
YVXE9G	MagnaFlux	
	Fry's Reagent	not recorded
YY7FT7	MagnaFlux	
YYDHP7	Fry's Reagent	3 applications, ~3 minutes each
YZXZGK	Fry's Reagent	5 minutes
Z6HJLT	Acid Etch Method	Total time = ~ 3 minutes
	Fort's solution	multiple applications over 3 mins total
ZEKYAD	MagnaFlux	
ZMXFRR	MagnaFlux	Polishing only occurred after Magnaflux.
	Fry's Reagent	10 minutes
	20% Nitric Acid	3 minutes
	Fry's Reagent	5 minutes
ZNUP73	Fry's Reagent	Second application after 5 minutes
ZP3G46	Fry's Reagent	2 applications, 1 minute and wiped clean, 5 minutes and wiped clean
ZW284L	MagnaFlux	
	Fry's Reagent	5 minutes
ZWHR2J	Fry's Reagent	30 minutes
	Turner's Reagent	5 minutes
ZXYFEQ	Fry's Reagent	Approx. 1 minute

Response Summary

Participants: 264

Recovery Methods

Chemical Processing:	209
Magnetic Processing:	145

Note: The total number of recovery methods used is not equivalent to the total number of participants because some participants used more than one recovery method.

Additional Comments

TABLE 5

WebCode	Additional Comments
2LX8AE	Images of outer envelope, inner envelopes, steel bar stock and aluminum standard were taken using camera. Incribed "Item 1 MFB" on back of Item 1 (rolled steel bar stock).
39T7EP	Finally, applying Fry's Reagent led to a better result as the alphanumeric characters came up more clearly. Even if the composition of both reagents is quite similiar, in this case Fry's Reagent worked better than Valenski Reagent.
4FKUD6	Fry's Reagent was applied. Serial number was visible almost immediately utilising magnifying headset and oblique lighting. Time span elongated as a result of trying to obtain best quality photograph
8C9Z4P	The addition of the arrow this year was very helpful.
A8T6KX	As received, the serial number had been obliterated due to a grinding action. The area of the serial number was polished using a Dremel tool equipped with an eraser wheel. Fry's reagent saturated cotton-tipped applicators were used for the serial number restoration. Positive Control: A saturated swab was touched to a piece of bar stock and a reaction was observed. Standard serial number restoration techniques revealed the following characters: 17DH3K.
ANBRLU	Please refer to photographs and serial number restoration worksheet. [Attachment not provided by participant].
BGVTPF	Began with MPI before sanding. Could visualize some of the characters. Sanded and continued with MPI. Needed clarification on one character. Used acid etching to confirm.
DCRGMT	First five characters where quickly revealed using MPI. The sixth required a deeper sanding due to more aggressive scratches.
E6QE2T	A comparison was made with the alphanumeric digits provided as a reference, keeping a relationship with the alphanumeric digits obtained.
EBV97M	Acid, Magnaflux, and Electro-Magnet were used alternately throughout the restoration. Total time restoring using acidic chemicals was approximately 45 minutes. Magnaflux was used prior to polishing to ascertain location of obliterated characters.
G7B62N	The alphanumeric characters of the obtained result are similar in morphology (Text font) to the printed samples of test No. 21-5251 - (aluminum standard)
GRVZ2M	During the chemical etching process, acid was periodically removed from the surface with use of delicate task wipes, in order to observe the appearing characters. Digital images were captured after the recovery of the serial number.
HJU84D	Chemical etching was necessary to restore the character "H".
HL4H9A	This was a much better test than the first CTS serial # proficiency test for 2021.
HQE7XR	After the restoration process sodium bicarbonate was used to neutralize the acid residues on the surface. [Examiner] Oct/13/2021.
K66G7Y	The Aluminum Standard was used for reference purposes only.
KF93NE	Stabilized with oil.

TABLE 5

WebCode	Additional Comments
M44EFL	Restored number was clearly viible.
N2QPAA	The original number was restored and read as 17DH3K.
NJ9TUF	Methods: Serial Number. Magnetic, thermal, and chemical methods may be used for the restoration of serial numbers. Conclusions regarding restored characters are made by visual examination of the restored surface under a variety of lighting conditions. Information regarding the alpha-numeric structure or the general location of serial numbers is obtained when necessary from reference sources or from firearms in the Laboratory's Reference Firearms Collection. Limitations: Serial Number Restoration. Except for the magnetic method, serial number restoration is a destructive examination and it is possible that the obtained results may not be reproduced in any subsequent examinations. Restored serial numbers are sometimes only visible during a portion of the reconstruction process, and are not necessarily visible at the conclusion of the process.
NL44EJ	The recovery of the sequence in general was very fast. Since the Magnaflux was used. The doubt occurred in one of the characters and after using the chemical reagents it was possible to discern what the character was.
P39FFD	Method 1 Version 4 utilised.
PCAJ3H	NONE. THANK YOU SO MUCH.
QTXDUD	Digital images of results taken with 60mm Macro and oblique lighting and placed in members file for documentation.
R6N4U6	The orientation arrow is a helpful and much appreciated addition to the test specimen. Thank you!
R7CAZZ	Slight rusting present on Item 1 barstock prior to processing.
R7WBYH	The acid was cleaned with delicated task wipers, constantly , to write down the characters appearing during each step. [Examiner] 8/nov/2021.
RJ7Q6N	A format of the serial number would still be nice (ie...three letters followed by three numbers.)
RNYQ4W	The item numbers "01-01" and "01-02" used to identify the pieces of bar stock were assigned by our laboratory information management system (LIMS).
RWBKJX	The directional arrow showing orientation was much appreciated. In addition, a serial number structure would make the test more like actual casework.
RZPCDX	Fry's reagent was diluted with water 3:1 and applied to the bar stock in 3-5 second intervals for a period of 45-60 minutes. After the restoration was complete the bar stock was neutralized with NaHCO3 & water and then oiled.
UCY47J	MagnaFlux 14AM and MagnaFlux 7HF performed before and after polishing with rotary tool.
UR2EMP	Started with 360 sandpaper but moved to 240 sandpaper to accelerate the polishing. Fry's Reagent used for 4 minutes resulted in 5 of the 6 digits being visible. More work applied with 240 sandpaper and Fry's reapplied for 5 minutes resulted in the 6th digit being readable.
VFDYN2	Stabilized with Oil after restoration.

TABLE 5

WebCode	Additional Comments
WJ6MGE	After restoration process sodium bicarbonate was used to neutralize the acid residues on the surface. [Examiner] 9/nov/2021.
WM6YDD	The magnate was used to determine magnetic properties and the magnifying glass was used for inspection. [Examiner] October/19/2021.
XPV64A	All but one character was visible when the magnetic particle restoration method was used. The acid etch method made all characters visible.
YCGEWR	The first character was obscured by damage and seemed to be longer than the other characters. There is really only one possibility for the character seeing the shape and that is a 1.
YCZRAP	After smoothening the surface softly with sand paper we rubbed the surface with acid saturated cotton swabs. The level of difficulty to reconstruct the serial number on this steel bar stock was compared to the steel bar stock from Jannuary much easier, also easier to the ones the last some years.
YFWCDA	The metal part was heated by applying magnetic particles.
YY7FT7	Positive result with the magnetic method "Magna-flux".
ZNUP73	Tested the metal stock (work piece) for its magnetic properties prior to deciding on the recovery method ([Lab] Method M55 V1). The work piece was magnetic. Having decided on the recovery method, I 'spot tested' the reagent on a surface area of the work piece away from the suspect area. After the second application of Fry's Reagent, I applied a steady stream of hot water for approximately 2 minutes. This technique further highlighted the obliterated characters. At the completion of my examination I cleaned the work piece with 'WD-40' and applied oil to preserve it.
ZP3G46	Photographed for verification.
ZW284L	All characters were visible with Magnaflux. Fry's reagent confirmed the number 3, and confirmed the remaining characters visible following Magnaflux.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 21-5251: Serial Number Restoration

DATA MUST BE SUBMITTED BY **Nov. 15, 2021, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: HLLLPM

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Please Note: A piece of aluminum bar stock labeled as 'Aluminum Standard' was also included in the sample set and is intended as a reference for size, shape and positioning of the stamped alphanumeric characters used in the serial number.
-Use caution when handling the sample, as there may be sharp areas on the Item 1 bar stock.
-An arrow symbol has been stamped on the Item 1 barstock to distinguish orientation.

Items Submitted (Sample Pack SNR2):
Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number.

1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1:

2.) What would be the wording of the Conclusions in your report?

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

3.) What methods were used to prepare the sample prior to attempts at recovery?

eg. Sanding, Polishing, Visual, etc. (Please describe in order.)

Method	Tool Used	If sanding was done what grit size was used?

4.) What recovery methods were used during your examination?

eg. Fry's, Acid Etch, MagnaFlux, etc. (Please list in order of use)

Method	If an acidic method was used how long was the acid left on the material?

5.) Additional Comments

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ASCLD/LAB, ANAB, and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

○ This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)
○ This participant's data is **not** intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Have the laboratory's designated individual complete the following steps
only if your laboratory is accredited in this testing/calibration discipline
by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory

ANAB Certificate No.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)